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WHEAT TRADE OF THE PACIFIC COAST.

THE rapid increase of the wheat trade of the Pacific coast must be considered one of the most remarkable features in the development of that region of the United States. The number of farms have increased in California between the years 1870 and 1880 from 28,724 to 35,934, or 51.5 per cent. in number and 45.2 per cent. in acreage. Oregon during the corresponding period increased the acreage of her farms 76 per cent. and Washington Territory even 117 per cent. The total exports, from these three states and territories, of wheat and wheat flour represented no less than 80,058,000 bushels for the year ending June 30, 1884. About eighty-eight per cent. of the total export was shipped to Europe, a trade which gives employment to a large number of vessels. When the Southern Pacific Railroad secured a continuous communication between the Pacific States and New Orleans, it was considered an economical problem to ship wheat along that route to Europe and save the long and tedious route around Cape Horn. These expectations have not been fulfilled on account of the higher railroad freights, and the water route as yet has been most successful against any competition by railroads in carrying the surplus wheat of the Pacific coast to European markets.

The fleet engaged in the commerce numbers about 440 vessels. The distance from San Francisco to Liverpool, by the way of Cape Horn, is, however, 16,000 miles; the average time occupied by sailing vessels to travel that distance is about four months and the question of securing a shorter route to market for their products, is of the greatest economic importance to the wheat growers of the Pacific coast, who watch with anxiety the progress of the Panama Canal as well as the project for a ship railway across the isthmus of Tehuantepec. The successful accomplishment of either of these great schemes would represent an inestimable advantage to the commerce of the Pacific slope; reducing the distance to the European markets more than half with a corresponding saving of time and expenses to the vessels engaged in the trade.

Of the 440 ships, representing a register of 575,769 tons, which cleared from the Pacific ports during the twelve months ending June, 1883, only 110 with 170,189 tons register, were American; the others foreign. During the year ending June, 1884, the number of vessels cleared had decreased to 389, with 504,954 tons, of which 95 were American, and 294 foreign, showing that here, as in every other sea-port town of the United States, the bulk of the shipping trade is carried in foreign bottoms.

A table compiled by the San Francisco Chamber of Commerce, gives the average transportation charges on wheat cargoes from San Francisco to Liverpool for a series of years ending with Dec. 31:

Year.	Average per ton of 2240 lbs.	Avg. per 100 lbs. Cents.	Avg. per bus. of 60 lbs. Cents.
1878.	£2.6s.5d.	50.42	30.25
1879.	£2.5s.11d.	49.88	29.98
1880.	£2.19s.4d.	64.45	38.67
1881.	£3.11s.0d.	77.12	46.28
1882.	£3.12s.0d.	56.49	38.89
1883.	£1.19s.1d.	42.45	26.47

The low freight rates of 1883 which have also prevailed during the present year

are caused by the abundance of vessels in ports of the Pacific coast, the limited demand for wheat in Europe and the partial failure of the crop in California, which gave to the wheats in San Francisco markets at times a higher price than that to be obtained in England. The inability of East India to compete successfully with American wheat and flour in the European markets is often attributed to the long distance it has to travel, and, consequently, heavier freight charges which must be paid to bring the produce to the markets of Europe. In this connection it becomes a matter of interest to compare the foregoing transportation expenses between San Francisco and Liverpool with those which have prevailed of late between Chicago and Liverpool, by lake, canal and river, or by all rail to New York and from there by steamship to Liverpool:

	Rail from Chicago to New York.			Total.
	Cents per bushel.	Ocean steamer.	Total.	
1878.	17.7	15.22	22.92	
1879.	17.8	12.40	20.70	
1880.	19.7	11.76	21.41	
1881.	14.4	8.16	22.56	
1882.	14.6	7.76	22.36	
1883.	18.5	9.08	25.58	

	Lake, canal and River. steamer.			Total.
	Cents per bushel.	Ocean	Total.	
1878.	10.1	15.22	25.32	
1879.	13.0	18.40	25.40	
1880.	13.2	11.76	24.96	
1881.	8.6	8.19	16.76	
1882.	8.7	7.76	14.46	
1883.	8.4	9.08	17.48	

Experimental shipments across the American continent by either one of the transcontinental railroad lines have not been attended with sufficient success to warrant the shipment of large quantities of grain to the European markets by this route, and, at least for the near future, the only hope for improved transportation facilities to the inhabitants of the Pacific slope will consist in the completion of the Panama canal or the Tehuantepec ship railway.

DRUNKEN ENGINEERS.

One of the greatest curses which can exist, says the Boston Journal of Commerce, is a drunken engineer. Not only is he a cause of constant peril to his employer and fellow workmen, and to the property in and about his engine room, but it is generally the case that the very object which has led to his employment by the penurious and short-sighted employer,—the saving of the few extra dollars per week which would be required by a sober reliable man,—is averted by the lack of prompt judgment and knowledge of engineering on the part of the drunken employee; for the man who would be a good engineer has no time to fool away in the rum shop, nor to lie in a state of semi-consciousness in a pile of shavings, for he will need, in the discharge of his duties, all the brains that nature has endowed him with, without dissolving any of it in the contents of the whiskey barrel.

Too few men appreciate the good, sober, competent and reliable engineer. Too many employers consider the engineer a sort of jester who has no need to know much of anything, and thinks that he is earning \$2 a day very easily if he can fire two large boilers, keep the engine running, attend to all the shafting and general repairs about the premises, and run a lathe or two during his spare (?) moments. They do not know that an additional dollar or two a day, to a good

engineer, would mean three or four dollars less a day shoveled under their boiler, paid into the repair shop, ground out of all the joints and bearings of their machinery, and burned out tubes and sheets of their boilers. A case has recently come to our notice where a drunken fellow, who is hardly competent to be a fireman, was put into the place of an engineer under whom he had been working. The engineer received \$18 per week; the fireman was paid \$12. One morning the factory did not start up as usual, and when the engineer was looked for he was found sleeping off the effects of an over-indulgence in liquor, in a pile of shavings in the fire room. He was warned by his employers that a repetition of such conduct would insure his dismissal, but it was not long before he was again found in his engine room in a similar state; but his employer did not dare to reprimand him, as he would work for \$12, when a sober engineer would require as much as \$18, and so the warning was only repeated and the man retained. Again and again this drunken fellow was found in a condition unfit to run a wheelbarrow—the only person in charge of two boilers and a valuable steam engine. Time after time the lives of hundreds of busy workmen and pedestrians, and of thousands of dollars worth of property, depended upon the movements of those hands which were controlled by a brain so addled that it could not guide its owner straight across the room, and upon the promptings of a mind that was so completely confounded that its owner could apparently only have had a faint comprehension where he was and how he came there. Time after time he was caught in this condition, time after time the warning and threat were repeated, but still he was not discharged. At the close of one week's work he blew out his boilers and started upon a regular spree. The boilers required some four one-half to five hours to fill under the city pressure, and he should have returned on Sunday, after the boiler had cooled down, and filled it up, ready to start up on Monday morning. Sunday, however, was spent in a continuation of the Saturday night debauch. On Monday morning a friend found him in the boiler-room in a half-dazed condition, with a heavy fire and no water in the gauge glass. He said he could not get any water into the boiler and the mill had got to start. His friend closed the damper and drew the fire. The mill did not start up at the usual time, and when his employer came down to the fireroom to see what was the trouble, he found the fires again being urged and without any water being shown by the gauge. Being asked for an explanation, the engineer said that the supply pipe was choked up and that it was impossible to get the boiler full of water. The piper was sent for and the pipe taken down, but no obstruction was found in it. The piper, who is a practical boiler man, requested to look at the back end of the boiler. This the engineer said was bricked up and unaccessible. The piper found a means of getting at it, however, and found that the two top rows of tubes were burned and leaking so badly that the water escaped about as fast as it could be put into the boiler. Here was the complete work of a whole factory suspended for a number of days, the expense of repairs incurred, and enough money dissipated to have paid the extra salary required

to secure a good, sober, competent man, under whose management the power would have been furnished more regularly, more economically, and more safely. The man is now looking about Boston for a situation, but we do not know whether the employer has learned anything by his experience or not.

NEXT YEAR'S WHEAT CROP.

Some time ago, says the "Pioneer Press," relying upon private information from well-informed sources, we advised the farmers of the Northwest that the proper policy for them to pursue was not to determine upon diminishing the wheat acreage of next year, but to keep it up to this year's figures, if they did not increase it. It was pointed out that the present market conditions are precisely those which are most likely to produce a reaction in another season. If the Northwestern wheat grower is discouraged, the wheat grower of Kansas, who has disposed of his crop for from 10 to 20 cents less per bushel, is in despair. The phenomenal cheapness of wheat and the stir made about it are arguments that have reached every farmer in the country. The natural result is to influence a great many to devote themselves to the cultivation of other crops. Particularly should this be true of the States that raise winter wheat almost exclusively. They are equally well suited to a variety of other forms of agricultural industry, and whether they shall give precedence to one crop or another is a matter to be decided each year by the prospective profitableness of their several products, as indicated by the state of the market. It was, therefore, reasonable to expect that they would this year cut down their wheat acreage very considerably and diminish the probable yield of next year, with a corresponding favorable influence on prices. Now this is exactly what is happening, as shown by the latest advices. A special telegram published in a late issue of the "Pioneer Press" contained a summary of reports from the leading winter wheat growing States. Tennessee, Virginia, Kentucky, Maryland, Missouri, Kansas and Indiana report a very large decrease in the area devoted to wheat as compared with that of last year, the falling off averaging from 10 to 38 1/3 per cent. In Ohio, Michigan and Pennsylvania, the decrease is smaller, ranging from 8 to 5 per cent. As these states represent the bulk of the wheat-producing area outside of the Northwest, and as they do most of their seeding in the fall, these figures represent a certain and material diminution of production next year.

The farmer of the Northwest will see at a glance that it is not to his interest to follow suit. It is to his interest, as we have repeatedly urged, to diversify his industry. But diversification is a slow process. It requires time to discover just what new processes are adapted to the conditions which surround him, and it requires a series of experiments, some of which may be expected to result in a failure. The man who abandons wheat raising altogether and at once, and stakes his all on something yet untried, may find that it would have been better to go slowly, even if that involved raising wheat for some years at present market prices. But, on the contrary, it is very certain that next season's market will be more favorable. That much is practically assured, although

we shall carry over a larger surplus than usual. And it is hardly reasonable to count on the recurrence of a season so uniformly satisfactory as the last proved to be in all the principal wheat-producing countries in the world. The Northwest occupies a vantage ground from which it cannot be dislodged. The soil and climate are especially adapted to the production of the chief of cereals. The quality of grain produced here cannot be grown in the lower latitude of the central wheat belt. Yet this is the quality a certain percentage of which will always be required for the manufacture of the best grades of flour. The increase of the export flour trade has already been noted, an increase which is likely to continue, and which affects most directly the milling interest of Minnesota. The wide and growing demand for recognized grades of flour, the fact that such grades require a supply of recognized grades of hard wheat, and the farther fact that the Northwest is the only field in which those grades of wheat can be

grown successfully, constitute a chain of circumstances which give to the Northwestern farmer greater assurance for the future than any competitor can boast. With this ascertained and permanent factor added to the demand, with the certainty that the world will need to be fed next year as abundantly as this, and with the knowledge that discouraged farmers all over the country are reducing the area assigned to wheat and turning their attention to what they believe will prove more profitable forms of industry, it is not difficult to ascertain in what quarter lie the interest and the opportunity of the Northwest. There is every probability that the farmer in Minnesota or Dakota who stoutly maintains next spring the usual wheat acreage will have no complaints to make a year from this time.

THE WORLD'S FOOD STUFFS.

Says the New York Produce Exchange Weekly: Interior prices of grain as reported by the Washington Department of Agriculture, give to corn an average price of 86½ c., which is one cent lower than average of 1879, when the supply in the ratio of population was quite as large. It has been lower but twice in ten years, in 1877 and 1878, after two previous years of abundance. It is highest in Florida, 80 cents and lowest in Nebraska, 18 cents; in Kansas it is 23 cents; in Iowa, 23; in Missouri, 26 cents; in Illinois and Minnesota, 31 cents; in Indiana and Wisconsin, 34 cents; in Michigan, 40 cents; in Ohio, 41 cents; in Kentucky, 43 cents; in Pennsylvania, 52 cents; in New York, 60 cents; in New Jersey, 54 cents. The range of value in the South Atlantic States is from 36 cents in Delaware to 72 cents in South Carolina, and 80 cents in Florida. In Georgia 66 cents and in the more Western States it is 45 cents. The average farm price of wheat is 65 cents per bushel, against 91 cents last December. The December price in 18 years previous has been below one dollar per bushel five times—in 1874, 1878, 1880, 1882, and 1883. The average is 42 cents in Nebraska, 45 cents in Kansas, 46 cents in Dakota, 50 cents in Minnesota, 55 cents in Iowa, 62 cents in Missouri, 68 cents in Illinois, 67 cents in Indiana, 74 cents in Michigan, and 75 cents in Ohio. The average of home grown wheat in the New England States exceeds \$1.00 per bushel. In New York it is 85 cents; in Pennsylvania it is 86 cents; in Virginia 80 cents; in Maryland, 83 cents.

The average value of oats is 28 cents, against 38 cents last December, and 37½ cents in 1882. The present value is the lowest ever reported by the Department. The lowest State average is 19 cents in Nebraska; the highest is 60 cents in Florida. It is 20 cents in Iowa and Minnesota, 22 cents in Kansas, 23 cents in Illinois, 27 cents in Indiana, and 29 cents in Ohio.

The average is from 42 cents to 60 cents in the South. The plantation price of cotton, as reported, averages from 9 cents to 9.13 cents per pound. It is 9 cents in Tennessee, Arkansas and Texas, 9.01 cents in Louisiana, 9.02 cents in Georgia, 9.03 cents in the Carolinas and Virginia.

The average price of the entire crop of potatoes is 40 cents per bushel. The lowest price is 35 cents in Michigan. The average in New York is 39 cents; 42 cents in Ohio, 35 cents in Indiana, 34 cents in Illinois, 28 cents in Iowa, 29 cents in Nebraska and 48 cents in Kansas. The average price is 8 cents lower than in December, 1883, though the crop is only 190,000,000 bushels, which is smaller than in 1883. In both London and Paris the wholesale prices of potatoes are lower than the farm prices in most of the States. The average in Paris is 30½ cents per bushel of 60 lbs., and 37½ cents per bushel in London—taking the average November price of eight varieties of potatoes.

The estimated losses of the agriculturists of the United Kingdom from 1883 to 1884 as placed by English authority is \$367,500,000. The wheat acreage of the United Kingdom has in a few years been diminished by more than one million acres. It is quite evident that present prices, the lowest in a hundred years, do not pay the cost of production. Still the English farmer continues to sell his wheat and other grains because he must in order to obtain the money he needs after ten years of constant losses.

The average price of eight varieties of potatoes in Paris on the 12th of November, 1884, 30½ cents per bushel of 60 pounds, or \$11.36 per ton of 2,240 pounds, which is about one-half cent per pound. Potatoes in France are plentiful and generally sound. They are cheaper in Paris than in London, and their cheapness in France will probably diminish the consumption of bread. The French rye crop of 1884 is, per government report, larger than was expected.

COST OF WHEAT CULTURE IN ENGLAND.

Cost of wheat growing in England, as given by an Evesham correspondent of Beerbohm's London "Evening Corn Trade" List:

	Income one acre wheat.	Expenditure.
5 qrs wheat, 31s 4d £7 16s 8d		
Straw	17s 0d	
Plowing	£1 0s 0d	
Harrowing twice.	8s 6d	
Seed'g, pitng, &c	1 4s 2d	
Harrow'g in spring	12s 0d	
Rent paid	1 2s 8d	
Hoeing & w'ding	5s 0d	
Reaping	10s 0d	
Cart'g & rick'g {	3s 0d	
Six men & 1 boy }		
Horses' labor	2s 6d	
Thresh'g 1s p. sk.	10s 0d	
Delivery to station	3s 0d	
Thatching	1s 0d	
Insurance	6d	
Profit	£2 11s 4d	
Total	£8 13s 8d	£8 13s 8d

Interest on capital, depreciation of machinery, cost of carrying on farmers' business not included. The £2 11s 4d profit and loss and the tenant-right aspect of the question will determine the profit remaining. The usual method of farming is three crops, roots, beans and wheat. Next year must be bare fallow, the lowest cost of which is 50s per acre, and rent at £1 2s 8d still being added. Should a grain crop be substituted for this, the cost of consuming it, with cake, corn, etc., will be greater than the expense incurred by allowing the land to lie fallow; but the latter better restores fertility. The average wheat yield is much less than five quarters.

English farmers have been subject to severe losses since the bad crops of 1879. In that year more than half of the grain growers of the United Kingdom were ruined or seriously crippled. The average price of wheat has not been since 1879 above 45s 4d per quarter for any whole year. Numbers of farms have been thrown on the owners' hands in all the farming districts. The

value of the fee simple of millions of acres of land in the United Kingdom has declined from 90 to 50 per cent. Farms that were formerly leased at 20s per acre were offered on sale at 240s per acre. The wheat crop of 1884 is better than for several previous years, but the price now 31s 1d per quarter is lower than at any time in 100 years. The lowest price previously recorded was 35s 6d, for the week ending Oct. 11, 1851. The yearly average price of wheat has not been below 40s per quarter more than twice in 100 years; in 1885 when it was 39s 4d, and 1851 when it was 38s. 6d. The average price of barley is now, Nov. 22, 31s 5d. The yearly average price of barley during the 94 years ended with 1888, has been below 32s. 31 times. The weekly average price of oats, Nov. 22, 1884, was 19s 6d per quarter. The yearly average price has not been below 20s in 94 years, with the exception of 14 years. The cereal crops of 1884, as revealed by the threshing does not come up to the early estimates. English farmers will not long grow wheat, barley and oats at the present prices.

EXPERIMENTS ON SUPERHEATING AS A CAUSE OF BOILER EXPLOSION.

On the 9th of April, 1883, Commandant Treve laid before the Academy of Sciences, at Paris, a note upon the different means proper to prevent the explosion of steam generators, and, in the course of his paper, attributed a large number of explosions to a peculiar state of the water called superheating. The Minister of Public Works having invited the Central Committee on Steam Engines to examine the processes proposed by Commandant Treve, a number of experiments were made by that body, and a report was drawn up and published in the "Annales des Ponts et Chaussees," from which the following is an abstract, as given by the Scientific American. Not finding in the industrial facts that have been observed up to the present any decisive proof in favor of M. Treve's theory, the sub-committee endeavored to enlighten itself through experiments, as follows:

First Series of Experiments.—The object that these had in view was a study of ebullition in ordinary glass vessels. It was desired to ascertain what importance the long preparation which physicists cause their vessels to undergo may have from the standpoint of superheating. Balloons of good, clear glass and dimensions were selected, and pure water and dilute aqueous solutions of various materials were boiled therein. The heat was obtained from a Bunsen burner, the flame of which was spread out by means of wire cloth. The temperature was given by a thermometer which dipped into the liquid. The ebullition of the pure water and of the saline and alkaline solutions gave rise to but a few insignificant movements, even when it was prolonged for some time.

Slightly acidulated water gave rise to very marked superheating, which, however, did not exceed more than two or three degrees. The ebullition was accompanied with violent movements of the vessel. When vaporization was excited by one of the means indicated for superheated water, there was at times a violent ebullition accompanied with projections.

Second Series of Experiments.—These experiments were performed at the shops of the Orleans Railway, in France, upon the saw mill boiler, and the object of them was as follows:

It results from the experiments of physicists that superheating is in all cases favored by a stagnation of water during a more or less prolonged stoppage, having for effect the expulsion of the imprisoned air. Let but a slightly energetic action occur on the superheated liquid, and evaporation will

take place and a large quantity of steam will be quickly emitted. Such a thing occurs at the moment of starting a generator that has slowly cooled during an entire night, with register and ash box closed, and with a fire covered uniformly with cinders. It was of interest, then, to ascertain whether, under such circumstances, the opening of the steam port, by causing an ebullition, would not bring about a sudden forward motion of the pressure gauge. The boiler experimented upon was a tubular one, having the shape of that of a locomotive, and the following dimensions: Heating surface, 65.4 square meters; capacity of the water reservoir, 3,130 liters; capacity of steam reservoir, 1,089 liters. During its normal operation this boiler vaporized about 45 liters of water per hour. It was heated by wood.

Observations were made on the 22d and 23d of June, 1883, and were resumed on the 11th of July, and continued every day till the 1st of August. In the morning, at the moment of setting the boiler in operation, and while the steam port was being opened, an observer had his eyes fixed upon the pressure gauge. But these observations showed absolutely nothing abnormal in the movements of the gauge. If the fire was quick at the moment of starting, the pressure continued to rise until the engine had acquired its normal speed; and, when the fire was covered, the pressure slowly lowered.

Third Series of Experiments.—In a boiler in normal operation the temperature of the steam is the same as that of the water. If, at a given moment, the water becomes superheated (to take that particular state in which it ceases to vaporize), the tension of the steam becomes independent of the temperature of the water, and there must, therefore, occur a difference between the temperature of the two. An endeavor was made to size differences of such a nature, and, with this end in view, a series of experiments was planned in which the differences of the temperature of the steam and water of a boiler should register themselves for a long time.

The boiler experimented upon was that of the Conservatoire des Arts et Metiers. It was a cylindrical one, having four lateral feed-water heaters, a heating surface of 18 square meters, and a grate surface of 27.5 square decimeters. A thermo-electric pile was constructed for suspension in the boiler in such a way that a series of solderings should dip into the water, while others of equal number should remain in the steam. This pile, which was 45 centimeters in length, consisted of 15 iron wires and 15 German silver ones, 1.5 millimeters in diameter, soldered successively by their extremities. These wires were arranged according to the generatrices of a boxwood cylinder, 40 millimeters in diameter, having an aperture running through it lengthwise for the passage of the copper wire by which the pile was suspended vertically from the self-closing cover of the manhole of the boiler.

The ends of contrary polarity, which remained free, were connected with a galvanometer needle, whose deflections were registered every quarter of an hour upon a sheet of paper by means of a puncture made by a vertical point fixed to the needle's extremity. This registering apparatus, with clockwork movement, was the same as had been successfully employed by Gen. Morin for measuring at the different points of a ventilating chimney, the excess of internal temperature over that of the surrounding air. Each positive experiment included the registering, every twenty-four hours, of the position of the galvanometer needle, before firing up and until the boiler was under pressure, at the time the engine was set running, and while the latter was operating under nearly a constant pressure, and finally during the period of cooling, up to the next day or day after. Then the paper was

changed in order to obtain a new diagram corresponding to the firing up again, before or after a new feed, until the pressure had risen to the normal one of five atmospheres, and had permitted the engine to run regularly. No notable deviation was exhibited in the position of the galvanometer needle during all these alternations, or during the whole duration of the observations, which were greatly prolonged. It resulted from an examination of the diagrams that the temperature of the steam pole was in general not quite so high; but the difference was always below 2° . This is explained by the proximity of the sides of the boiler, the temperature of which was naturally lower than that of the steam, and which radiated against the steam pole.

During the night of August 26-27, the galvanometer needle became strongly disturbed, as shown by the tracings. What was the cause of it? We do not know; but, at any event, the form of the tracing does not permit it to be attributed to superheating, seeing that the movements occurred between half-past one and six o'clock in the morning, that is to say, during the period of cooling. Further, the diagram shows that the deflections of the needle occurred suddenly and disappeared slowly, while the contrary would have taken place had superheating been the cause of the movements. It is thus established by direct experiment that no appreciable difference is shown between the temperature of the water and that of the steam during any of the periods comprised in the observations; either during the running or during firing up or cooling.

Fourth Series of Experiments.—Finally, it was desired to ascertain whether, by depriving water entirely of the air in solution, by means of an extremely prolonged ebullition, the phenomenon of superheating could not be obtained in a metallic boiler. The experiments were performed at the laboratory of the Ecole des Ponts et Chaussees, at the Trocadero. The boiler used consisted of an iron cylinder provided with strong cast iron heads. This was tested to a pressure of 15 kilogrammes per square centimeter. Its capacity was about 21 liters, and it was heated by a large Bunsen burner, having two crowns, one of them carrying 6 and the other 12 jets. The gas pipe was provided with a pressure regulator. By varying either the number of jets or the pressure of the gas, the conditions of heating could be modified within wide limits. The boiler was provided with the following accessories: A good Bourdon pressure gauge, divided into quarter kilogrammes; a water gauge, a safety valve, and various cocks. It was also provided with two horizontal mercurial thermometers that passed through stuffing boxes, and the bulbs of which entered, one of them, the water, and the other the steam. Their tubes were external to the boiler.

The arrangements made for obtaining a prolonged ebullition were as follows: From one of the cocks, which debouched a little over the center of the boiler, branched a tube that bent so as to run nearly to the bottom of a vertical cylindrical vessel of water, made of galvanized iron. The water in this reservoir had been previously boiled, and the same was the case with that which was to be added from time to time to replace the water which had evaporated. The capacity of this vessel was 50 liters.

The boiler being heated, the steam produced bubbled up through the water in the vessel, and kept it at a boiling point. As the cover had but two narrow apertures, one of them for the passage of the steam, it will be seen that there always existed at the surface of the ever hot water in the vertical cylinder, an atmosphere of steam, and that the water could not dissolve any air.

The operation was as follows: The boiler was heated for about an hour and a half, and then the gas was shut off. Through

the condensation of the steam by cooling, the boiler became completely filled with water drawn from the cylinder. In half an hour, heat was again turned on, when there flowed through the feed pipe, first, water, and next, steam. For alternately admitting and cutting off the gas, a small apparatus was used that consisted of a hydraulic working beam, which maneuvered the gas cock. The boiler had been cleaned with caustic potash, and then washed with a large quantity of water. The apparatus was set running January 4, 1884, at 3 o'clock P. M. The experiments, properly so-called, began January 15. The water had therefore boiled, before the first experiment, for eleven days, night and day, with an interruption of half an hour every two hours, corresponding to about 200 hours of continuous ebullition. It may be admitted that on the 15th of January the boiler and water were absolutely devoid of air.

During this entire period the two thermometers were observed from time to time, and were always found to agree within about one or two degrees. Such difference we have already explained in our account of the Conservatoire experiments. The experiments, properly so-called, were performed on the 15th of January and the days succeeding, and were as follows: All the cocks were closed, and the boiler being submitted to the action of heat, the temperature and pressure consequently rose. At intervals, simultaneous observations were made of the thermometer which dipped into the water, of the one which was in the steam, and of the pressure gauge. Finally, the conditions of heating were varied, so as now to cause the temperature to rise 50 degrees in half an hour, and then to rise only 28 degrees in six hours and a half.

The last experiments were performed after the boiler had been kept closed, and slightly heated for nearly fifteen hours, and the result of them may be summed up as follows: The two thermometers were constantly in accord; the difference, which was always less than 2° as in the Conservatoire experiments, is very naturally explained by a few small variations in the construction of the instruments and the action of pressure upon their bulbs, and especially by the unequal effect of radiation from the sides of the boiler. It was remarked, in fact, that the thermometer in the steam gave lower indications than the other when the pressure rose, and, on the contrary, higher indications when it lowered. At the moment of opening the escapement no abnormal movement in the needle of the pressure gauge was ever seen.

Conclusions.—In conclusion, the committee believes that it has in no wise been demonstrated, up to the present, that the superheating of water has caused any boiler explosion, nor that superheating has ever occurred in generators used in the industries. If it does occur, it is only in extremely rare cases, and through the concurrence of exceptional circumstances that are up to the present neither defined nor known. There is, therefore, no need for the moment of examining the remedies that have been proposed for preventing the superheating of water in generators.

COMPETITION IN AUSTRIA.

[From *Ungarische Mueller Zeitung*.]

In view of the constantly increasing competition on the flour markets, the Austrian millers, especially those in and around Vienna, encountered increasing difficulties in disposing, individually, of their products. On the principle that there is strength in unity, they formed during the last year the "Austrian Export Milling Company," whose object it was to find new markets for the product of the Austrian mills and to compete with the Hungarian flours in the grain

and flour centers of the world. But to accomplish this object successfully there are many difficulties to overcome, for aside from the fact that the mills of Budapest are very favorably located, they have had a strong hold upon the leading markets for so long a time that the Austrian millers find it an exceedingly hard task to enter into a successful competition with their Hungarian brethren. The disadvantages which operate against a full development of the Vienna milling industry can be traced down to two sources. The principal one is found in the unfavorable freight rates as compared with those offered to the Hungarian establishments, who, by virtue of the fostering care of the Hungarian government, enjoy every possible advantage in this line, giving to them transportation rates which are lower than even those offered by the cheapest water route on which the Vienna miller can ship his flour. In addition to this, our mills receive the largest part of their grain from Hungary, whereby the prices are correspondingly increased, and these conditions combined enable the Budapest mills to ship their products over longer distances for smaller rates than can be done by the Vienna millers. The result is that the milling industry of Lower Austria which, in former years, was in such a flourishing condition, is slowly and surely succumbing, while the Hungarian industry continues to pay rich dividends.

The second disadvantage consists in the fact that the Vienna mills are smaller and scattered over a large surface of ground and are thus unable to produce such uniformity in their output, even if they have all the modern improvements embodied in their works, whereas the Budapest mills are able to place different grades on the markets of unvarying quality and uniformity. It is but just to note the constant desire of our mills to make the most extended use of the modern improvements in milling machinery which enable them to produce flour of a quality which can bear comparison with the most famed product everywhere.

IN Southern Utah, at Cove Creek, there are located several mines of native sulphur. There are twenty-three claims located, and the body of brimstone so far surveyed extends 2100 feet in length, is 1800 feet wide and has a thickness of about sixty-four feet. This immense deposit contains many million tons and will ultimately yield to its owner a vast fortune. The purity of the sulphur is unquestioned. As the result of a carload recently shipped to a St. Louis firm, the purchaser wrote that it was absolutely pure—not a trace of arsenic in it. It is 99 and 80-100ths per cent. pure sulphur. This is purer than the Sicilian article, which is in great demand, and which is only 95 to 96 per cent.

THE boiler makers of the United States and Canada were recently in joint convention in the city of New York. Among the acts of the convention was the adoption of a resolution to raise a fund from which \$350 will be paid to the family of any member who dies.



SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1/2 cents for each additional word. Cash with order. Three consecutive insertions will be given for the price of two.

SITUATION WANTED.

By a man who has had fifteen years' experience in running grain and merchant flour mills. Address, Wm. H. WOLLERTON, McElhattan P. O., Clinton county, Penn. 411

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Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1/2 cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or \$1 for four insertions. Cash must accompany the order. When replies are ordered send care of this office, 10 cents must be added to pay postage.

FOR SALE OR RENT.

A three run water mill in running order. Good machinery. Well located for merchant or custom work. Address, JANE PUPE, Cortland, N. Y. 86

CHEAP! CHEAP!! CHEAP!!!

I will sell one "Yale" vertical mill, style B, 12 inch burs, all iron frame, entirely new, never having been used, very, very cheap for cash. Address "Bargain" care THE MILLING WORLD, Buffalo, N. Y.

YOU CAN BUY THESE CHEAP.

Three McCully Corn Cob Crushers. The above articles are brand new, in perfect condition, just as they left the factories, and will be sold very cheap for cash. Address S. 80, care THE MILLING WORLD, Buffalo, N. Y. 1f

FOR SALE CHEAP.

One 6-horse power engine and 10-horse power boiler, all complete, price, \$350; one 8-horse power engine and 10-horse power boiler, price, \$375; one 10-horse power Portable complete, price, \$350; one 10-horse power Russell Traction, price, \$300; one 4-horse power vertical engine, price, \$120. Call or address for particulars, EZRA F. LANDIS, Lancaster, Pa. 262

FISKE'S BOLTING REGULATORS

Keep the bolting cloth clean in all kinds of weather and in handling all kinds of stock. Increases the bolting capacity from 25 to 50 per cent., and prevents making specky flour. No shafting, belting or gearing required. Any one can attach it. I have a few of these devices which I will sell cheap. They are brand new. Send for description and price. Address MILL-WRIGHT, care THE MILLING WORLD, Buffalo, N. Y. 1f



HOW DOES THIS SUIT?

"Coch's Bridge, Del., Aug. 25, '84.
"Messrs. Kreider, Campbell & Co.,
"Philadelphia, Pa.

"Gentlemen: Your machine was sent here against an —, on condition that we should keep the best, and we tried each machine, and are frank to say that if your machine cost us \$500 and the other was offered us as a present we should take yours, as we cannot find a fault with it. The above machine has a capacity of 50 bushels per hour."

We think best not to publish name, but it will be given upon application. Address, KREIDER, CAMPBELL & CO. Philadelphia, Pa.

BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO.,
Columbus, Ohio.
Office and Factory, 5th Street, north of
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MANUFACTURERS OF

Munson's Celebrated Portable Mills,

FOR WHEAT, MIDDLES, CORN, FEED, Etc.

Millstones, Hangings, Bolting Chests, Shafting,

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DEALERS IN EVERY KIND OF

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Genuine Dufour Bolting Cloth.

Specifications, Estimates and Plans furnished.

MUNSON BROS.

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OFFICES, LEWIS BLOCK, SWAN STREET,
BUFFALO, N. Y.
G. B. DOUGLAS, - - Managing Editor.
THOS. MCFAUL, - - General Agent.

SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 per year, in advance; can be remitted by Postal order, registered letter, or New York Exchange. If currency is enclosed in unregistered letter, it must be at sender's risk.

To all Foreign Countries embraced in the General Postal Union, \$2.25 per year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Card of Rates sent promptly on application. Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturday.

EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

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NOTE—You can save money by availing yourself of the following offers. You can please every member of your family by accepting one or more of the following offers. To save money, and at the same time make the family happy, ought to be the main object of every married man's life. See how you can do this.

Take these for Yourself.

THE MILLING WORLD, per year.....\$1.50

WITH

The Builder and Woodworker	(\$1.00 per year)	2.00
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Harper's Magazine	(\$4.00 per year)	4.50
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WITH

St. Nicholas	(\$8.00 per year)	4.00
Harper's Young People	{ 2.00 " "	3.00

Readers of "The Milling World" will confer a favor upon the publishers, and derive material benefit themselves, by mentioning this paper when opening correspondence with advertisers. Drop us a postal card when you have written to an advertiser, give us his name, and then we will put you in the way of getting the benefit. Don't forget this.

CONSULAR reports from the Canary Islands state that American flours are receiving the full appreciation due to them more and more. Here, too, the French flour used to reign supreme, but is now regarded with increasing suspicion, and the import from that source has been, owing to the cholera, entirely stopped. If regular lines of communication could be instituted between the United States and those islands, a permanent and increasing market would soon be established.

HONESTY is the best policy unless you're dead sure you won't get caught. Mr. Brew-

ington thought he was dead sure, but he wasn't, and now he languishes behind iron bars. Mr. Brewington was a packer in the National mills, at Alton, Ill., but wealth came to him slowly, and to coax the giddy goodness of fortune, he began "shoving the queer." This was wrong of Mr. Brewington, and he no doubt now regrets that he has been caught at his little game. We think Mr. B. has shed no lustre on the milling fraternity.

THE treaty between the United States and Spain is stirring up a good deal of discussion in the press of the land. Of course the majority look upon it from an individualized standpoint and the importance and value of the treaty is determined by the advantages or possible injuries that may accrue to one or the other business. Although grains and other cereals are to be admitted duty free into Cuba, flour and starch are subjected to the old custom rules, and the millers of this country need not have their sleep disturbed by the apparition of an imaginary new market for the products of their industry, as the flour market of the United States will not be influenced by the new treaty.

THE disasters of one nation very often have a beneficial reaction upon the affairs of other nations. Thus the war between China and France has created quite a demand for American provisions on the Chinese coast; now we are told that the rigid quarantine at Gibraltar against all French vessels since the appearance of the cholera epidemic, has resulted in a brisk demand for American flour to take the place of the article hitherto imported from France. Whether the American product will retain its hold on that market, even after the disappearance of the epidemic, and perhaps extend into Spain, is a question that will be determined by the ability of those merchants who have the matter in hand at present.

How many of our readers are contemplating a visit to the World's Exposition at New Orleans? It was announced to open on the 16th inst, but in all probability it will require a month longer to get everything in nice running order. Comparatively few visitors from the North will be in attendance until after the holidays, while the largest attendance may be anticipated during February, and particularly during the Mardi Gras festival. From present indications railroad fares are going to be very cheap, and as ample preparations are being made for the care and entertainment of visitors the Exposition ought to prove a financial success. We contemplate "bunking" aboard the Great Eastern, and shall make special arrangements with the band to lull us to slumber by playing "Rocked in the Cradle of the Deep."

HYPERSENTIMENTAL people are apt to regard the fact that farmers sometimes burn corn for fuel, with holy indignation, on the plea that corn does not grow for that purpose. Nevertheless farmers will do it if the burning of other material is more expensive, and corn, which holds on an average only from 1.5 to 2 per cent. of ashes, furnishes them a good and cheap fuel supply. We are told that in some out-of-the-way localities of Nebraska farmers receive only 12 cents per bushel for corn, and two bushels of corn are considered as equivalent in heat to one bushel of soft coal, for which they have to pay 22 cents, so the difference will principally consist in the availability of the supply. The corn would need to be sold first, and, for the money obtained, coal must be bought, and it seems reasonable that these farmers will save the time necessary for the double transaction, and burn their corn at first hands. Improved railroad facilities will undoubtedly change the conditions,

but at present the farmers are justified in considering corn cheaper as fuel than coal.

THE MILLING WORLD has to acknowledge the receipt of a copy of the Annual Statistical report of the New York Produce Exchange for the year 1883. The volume of 464 pages, contains an immense amount of information with regard to trade and transportation facilities of New York city and tabulates the receipts of flour and grain received by rail, canal and coastwise vessels, as well as the quantities exported during the year. It gives the receipts at the leading grain centers; the annual production of flour at the milling centers, cereal production, freight charges, etc., etc.; in fact, the information condensed into this book forms a valuable addition to the record of the resources of America, but we fail to understand why it has taken eleven months time to compile it. Not that the information it contains loses any of its value as a reference for future times, but we ridicule consular reports, on the state of trade in foreign countries, as nearly useless, because they treat of conditions six or twelve months old. If the Produce Exchange of the Empire City requires almost a year to publish the report of one year's trade, consuls in foreign countries will not need any excuse, if the subject of their reports are a year old.

THE often repeated cry of overproduction in wheat appears to have done its duty, as the reports, current now, state that a great reduction in the wheat acreage will be made during the coming year, not only in America, but all over the world. The truth of this assertion, however, remains to be proven; it is quite possible that European farmers in many unfavorable localities will be obliged to curtail their grain production, or change entirely to stock farming, but whether the great grain exporting countries will adopt that policy, is an assertion which we feel inclined to doubt. The present low prices seem to be especially fit to determine where and under what conditions wheat farming will prove a profitable investment in the future, and from all appearances America will be more than able to retain her position at the head of all grain producers. As it is recognized now that grain tariffs are, for any length of time and successful operation, practically out of the question, it will depend entirely upon the possibilities of cheap production and cheap transportation to the leading centers; in other words, cheap grains will drive the high-priced grains from the market and determine in a practical manner which country is the fittest to survive in this struggle for existence. There are undoubtedly many localities in the United States where stock or fruit farming will prove more profitable than wheat growing, and it is well enough if these sections are put to their legitimate use, but our great grain fields of the Northwest, we venture to assert, will, for quite a while to come, be most profitably cultivated for wheat, and will increase rather than decrease their acreage, notwithstanding.

WE have a friend who is an ardent Republican in politics, and the result of last month's election has taken him completely off his feet. In the course of a recent business communication he says: "My worst fears are realized. It has turned out just as I anticipated it would if Cleveland should be elected. The great bulk of the business community is made up of Republicans, and had our own party been successful, they would have considered the country safe, because the Governmental policy would have been settled for at least the ensuing four years, and each and every man of that party would have gone home and instructed Eliza Jane to 'rag out considerable' in the

way of foot gear and top dressing. Now, however, all is chaos, and the business element is in the dark as to what the future has in store under Democratic sway." Our correspondent is one of a very large class of American citizens who forget that it is the people who make prosperity, and who are utterly oblivious of the fact that almost the entire business world is in a state of depression. Mr. Cleveland has not yet taken his seat, and for two years it would be a most difficult task to consummate legislation of a character adverse to the business interests of the country, even were it desired so to do. The country, and we speak most authoritatively, is entirely and emphatically safe. Those who think otherwise can readily dispose of their property if they feel like accepting "panic prices." We would take a few choice lots ourselves, being quite content to hold them for the rise which is even now on the way. The defeated Presidential candidate did not hold the destiny of the United States in his hands, and the successful candidate does not. Those who keep their under-garments on will stand a better chance of not taking cold, than those who, in a frenzy of excitement, remove that necessary and comfortable, (if the buttons are all on) vestment.

THE agitation recently initiated by the Board of Trade of Toledo against high railroad freights, is seconded by the Illinois Railroad and Warehouse Commissioners, who have called a meeting at Chicago "for the purpose of reducing freight rates in the state in proportion to the great decline in the price of wheat and corn." The policy of the Trunk Railroad pool has always been to charge the highest rates possible; if the shippers are successful, the policy may be reversed on the principle to pay as little as possible. The Chicago "Tribune" heartily endorses the movement and to prove its position has collected a series of figures from correspondents in Kansas, Iowa, and Nebraska, giving the ruling prices of grain and the railroad freights to Chicago. So we are told that at Abilene one of the wheat centers of Kansas, the best wheat is worth 46 cents a bushel, but the freight charged to ship that bushel to Chicago is 25 cents. The inferior grades bring but 36 cents, but the cost of marketing is the same as for the best grade. At Wichita, Kan., wheat sells at from 30 to 48 cents a bushel, while freight charges to Chicago are 27 cents. Figures from other points indicate a state of affairs corresponding to those quoted above. With corn it is worse, for in many places of the corn growing states, the freight rate to Chicago is higher than the market value of the corn at the railroad station; for instance, at Central City it sells for 15 cents, but the railroad charges 18 cents per bushel to transport it to Chicago. This is, of course, only where the roads have formed pools to prevent the cutting of rates; along lines where free competition exists the charges are reasonable. Here the "Tribune" tells us that from Council Bluffs to Chicago, a distance of 500 miles, a bushel of corn is carried for 8 cents, but from Des Moines to Chicago, a little more than half that distance, they charge 11 cents. It has become an every day occurrence to see railroad pools "fixing" their freight rates according to their own pleasure on the "public be d—d" principle; it will be a curious spectacle to see shippers forming a pool for mutual protection against such monopoly's rapacity. They may not be successful at the first attempt; it may require prolonged agitation to bring it to a successful end, but a thorough investigation of the question "what constitutes paying freight rates on railroads" will form a splendid basis for future action, and the present time, when everything is curtailed down to the most rigid economy, is very favorable for such an undertaking.

ESTABLISHED 1856.

EUREKA GRAIN CLEANING MACHINERY | GENUINE DUFOUR BOLTING CLOTH

OVER 18,000 MACHINES IN USE.

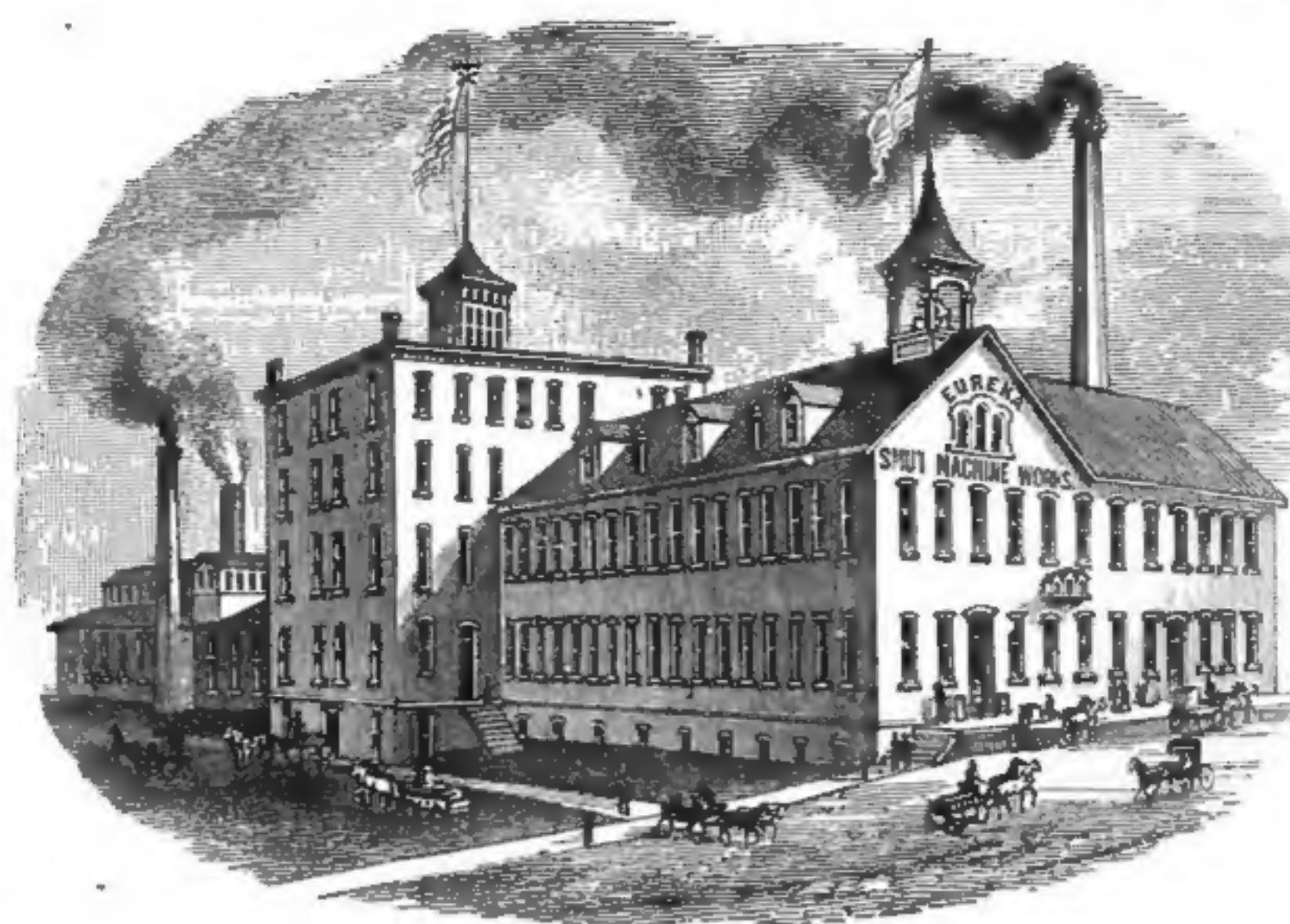
OUR LINE COMPRISSES

The Eureka Separator,
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The Eureka Magnetic Automatic Separator,
Silver Creek Flour Packer.

Our establishment is the oldest, the largest and most perfectly equipped of its class in the world, and our machinery is known and used in every country where wheat is made into flour.

HOWES & EWELL,
SILVER CREEK, N. Y.

European Warehouse and Office: 16 Mark Lane, London, E. C. Gen. Agency for Australian Colonies and New Zealand. Thos. Tyson, Melbourne, Victoria.



We handle this justly celebrated cloth in large quantities, and can fill all orders upon receipt. For such as may prefer a cheaper grade, we offer our

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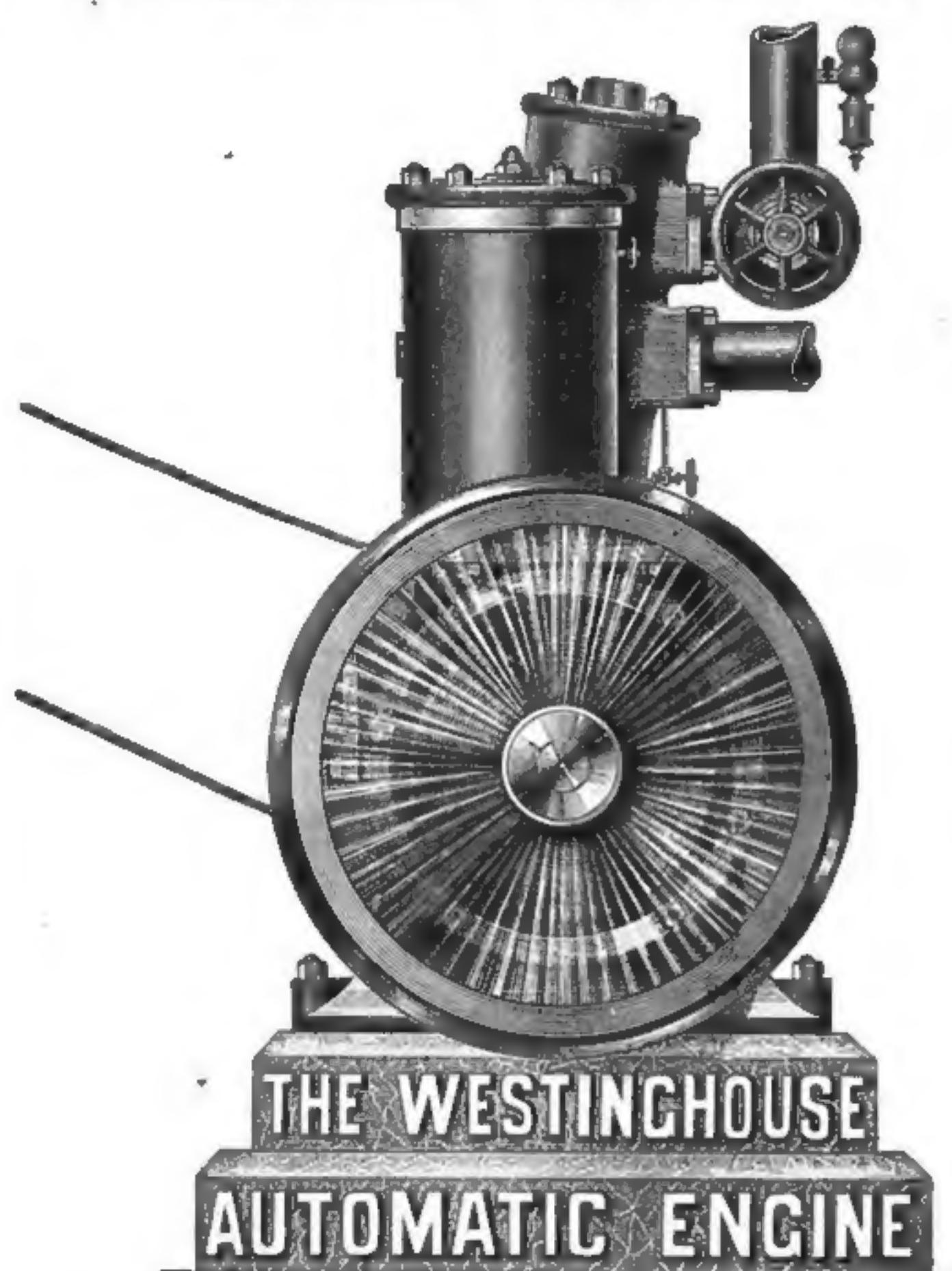
Guaranteeing it to be equal in every particular to any other cloth on the market, except the Dufour. We have handled it for years, have sold thousands of yards of it, and know it will fully sustain our representations.

Send for Samples of Cloth, Our Style of Making Up, and Prices.

HOWES & EWELL,
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1,000 ENGINES NOW IN USE!

30,000 Horse Power now Running.



Sales 2,000 Horse Power Per Month.

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GEHNRICH'S PATENT GLASS TUBE JOINTS

AN IMPORTANT INVENTION FOR MILLERS.



This invention consists of a Glass Tube Joint, which can be made to correspond in size to and be inserted in any tin spout used to convey grain, meal, etc., in the operation of Grinding Flour and other substances. A section of the spout is thereby *Rendered Transparent*, enabling the miller, or any one passing by, to see at a glance whether the contents of the spouts are properly running. By the use of this appliance the necessity of frequently opening spouts is avoided, and the consequent saving of time and flour is very important in an economical point of view. These Glass Tube Joints have given the most complete satisfaction, and are esteemed as an indispensable requisite wherever they have been applied. Full information furnished on application to the inventor.

H. GEHNRICH, 54 Rutgers St. NEW YORK CITY.

More Evidence That The Case Machines Still Lead.

READ THE FOLLOWING LETTER FROM ONE OF OUR CUSTOMERS:

CARROLTON, O., Dec. 2, 1884.

CASE MFG. CO., COLUMBUS, O.

Gentlemen: After making up our minds to change to the Roller System, we were visited by agents from other roller firms, who, in every instance condemned your system, which led us to believe that they were jealous of you, and now we are fully convinced of the fact. Our mill is now running on the Case system, and from the first start we have had no trouble, not having to change a spout or any cloth. Our flour is excellent and we will put it against any in the State, our yield is splendid, not using over 44 bushels to the barrel, and while the mill was built for 60 bbls. in 24 hours, we are making 80 bbls. without any trouble. Your Rolls, Purifiers, Centrifugal Reels, and Scalpers are first-class, while your automatic feed is "a daisy." We wish you a prosperous future and extend an invitation to all millers to call and see us.

Yours Truly,

M. & K. HARDESTY.

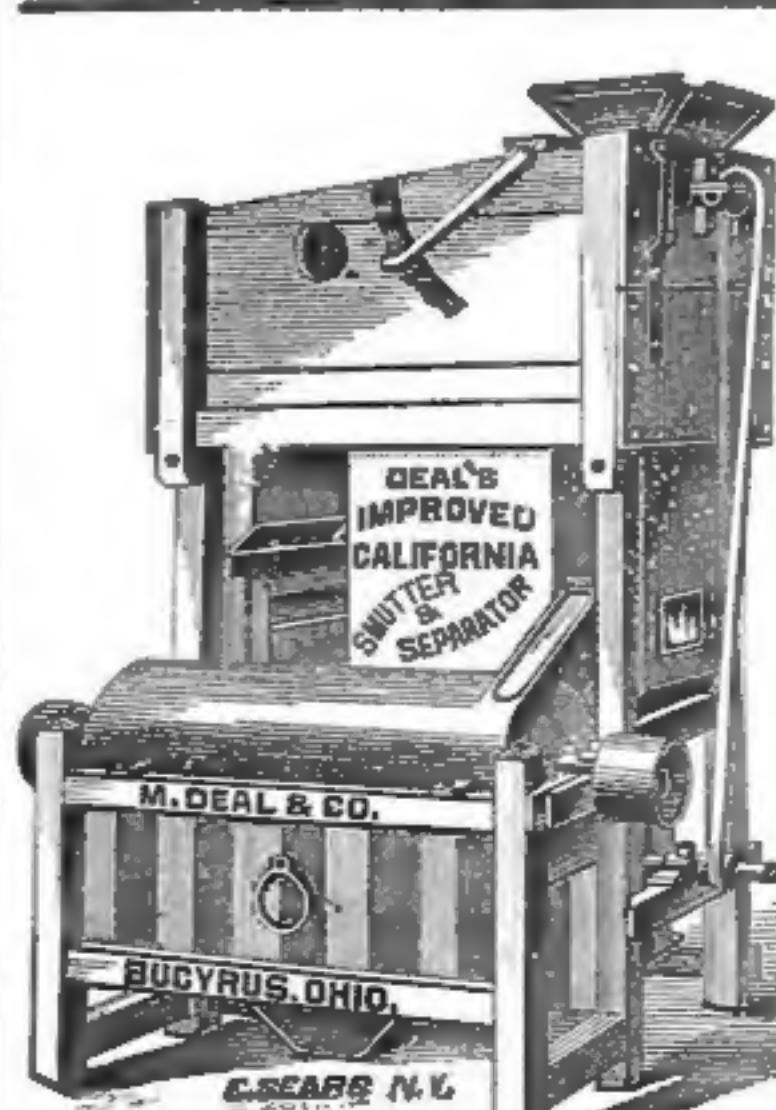
We can do as well for you as we have for the above firm. If you contemplate making any changes, or are in need of anything in the mill furnishing line, it will pay you to confer with us before placing your order.

Address,

THE CASE MANFG. COMPANY

COLUMBUS, OHIO, U. S. A.

GOVERNORS | For Water Wheels | Cohoes Iron Foundry & Mch. Co.
Send for Catalogue. Cohoes, N. Y.

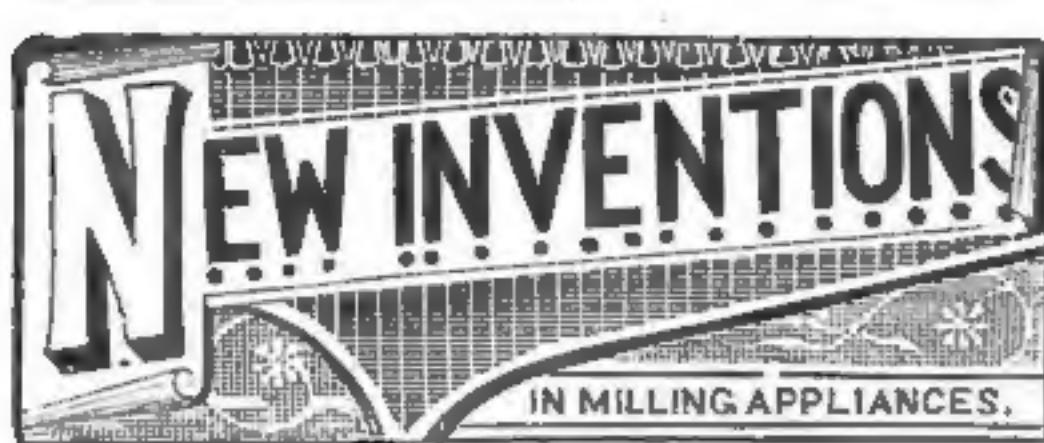


CALIFORNIA!
DEAL'S CALIFORNIA MAGNETIC
BRUSH SMUTTER
AND
SEPARATOR COMBINED

Warranted The Very Best In America.

The purchaser being the judge after 60 or 90 days' trial. We manufacture a complete line of Grain Cleaning Machinery, and guarantee every machine to give entire satisfaction or no pay. Send for circulars, it will pay you.

M. DEAL & CO.,
Sole Owners and Manufacturers,
BUCYRUS, OHIO U. S. A.



CENTRIFUGAL BOLTING-REEL.

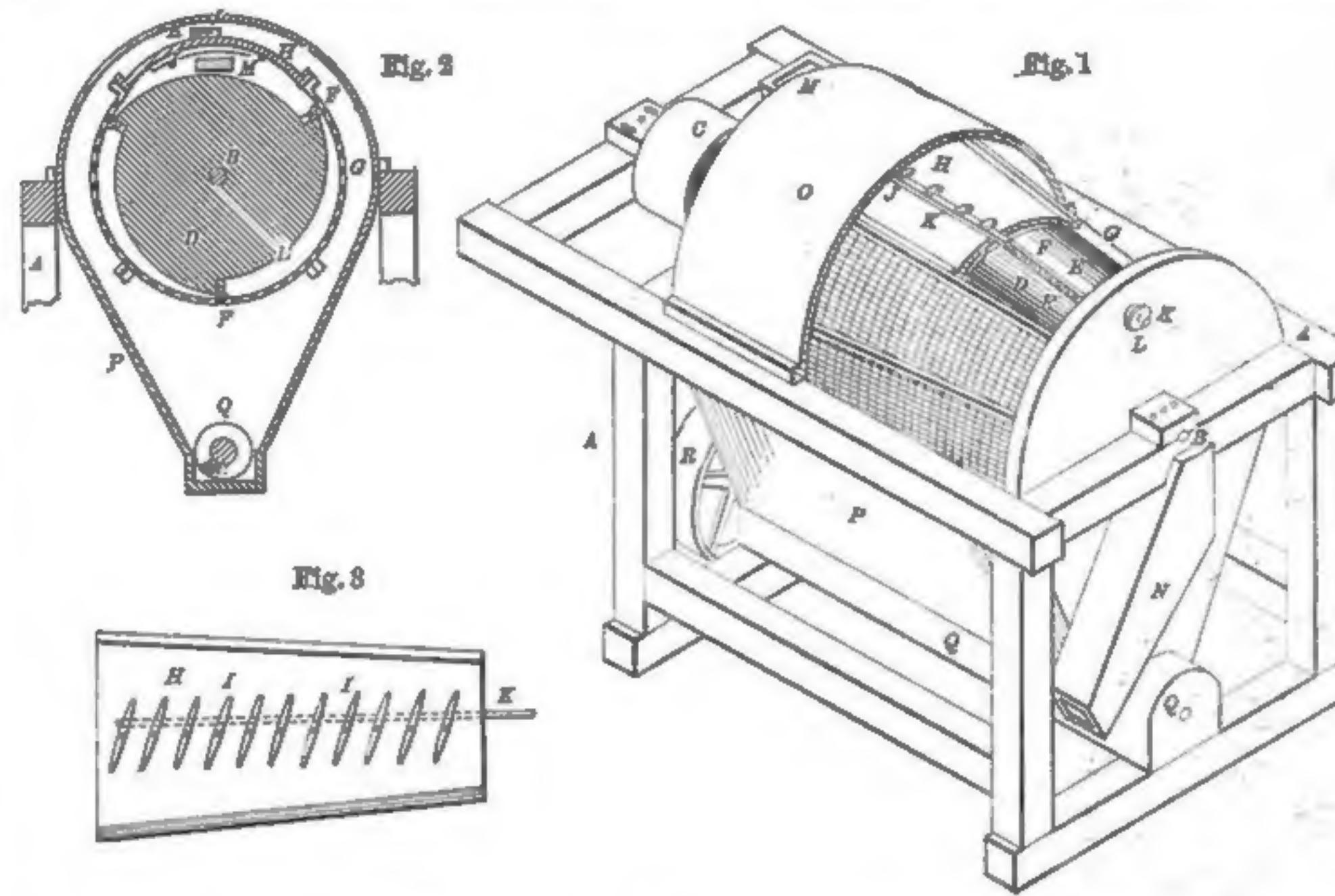
Letters Patent No. 308,613, dated Dec. 2, 1884, to Stephen Hughes, of Hamilton, Ohio, assignor to the Stephen Hughes Manufacturing Company, of same place. This invention pertains to a machine for bolting or dusting milling products. Figure 1 is a perspective view of a machine embodying the improvements, portions of the same being broken away to exhibit the interior of the structure; Fig. 2, a vertical transverse section of the main parts of the machine, and Fig. 3 a view of the interior surface of the feeding-stave H of the jacket. In the drawings, A represents the framework of the machine; B, a horizontal shaft journalled longitudinally in the upper part of the frame; C, a driving-pulley on the rear end of the shaft; D, a rotary cylinder fast upon the shaft; E, the periphery of the cylinder divided into three eccentrically-spiral surfaces, as shown in Fig. 2; F, brushes arranged longitudinally upon the cylinder and projecting somewhat from its spiral faces; G, a closed jacket, of wire-cloth or other bolting material, surrounding the rotary cylinder, and of such size as to be engaged by the brushes, and made up in separate staves; H, the top stave of the jacket, solid instead of being of wire-cloth like the other staves of the jacket; I, a longitudinal series of obliquely-arranged pivoted vanes upon the inner surface of this top stave, H; J, crank-arms upon the journals of the vanes; K, an adjusting-rod connected with the crank-armst L, an adjusting-nut upon the adjusting-rod outside the casing of the machine; M, the inlet-spout by which the product to be treated is admitted to the interior of the jacket G; N, the outlet-spout by which the coarser product leaves the interior of the jacket; O, the main casing around the jacket; P, downward continuations of the main casing at the sides; Q, a conveyer at the extreme bottom of the outer casing; R, the pulley by which the conveyer is driven by belt from a pulley on the main shaft of the machine. (Not shown in the drawings.) The material to be bolted is admitted into the jacket, wherein rotates the cylinder, through the inlet-spout M. The centrifugal action of the cylinder throws the material to the jacket-cloth, and the brushes, sweeping the interior surfaces of the cloth, cause the finer material to pass through the cloth, whence it falls within the casing to the conveyer below to be carried away, as desired. The brushes and the eccentric spiral surfaces of the cylinder also serve to create a centrifugal air-blast, which aids in the bolting operation, as is well understood. The coarser product, too coarse to pass through the bolting-cloth, leaves the cylinder-chamber within the jacket through the outlet spout N at the end wall of the cylinder-chamber. The interior surface of the jacket is in the form of a circle, adapted to be swept by the brushes of the cylinder; but the upper stave, H, expands into an enlargement of this circle, so that the brushes do not sweep its inner surface. The oblique vanes I project downward from the inner surface of this top stave, and their depth is such that their lower edges conform substantially to the circle swept by the brushes. The direction of the obliquity of the vanes is such that material passing across the top stave along the vanes will move forward, from one end of the machine toward the other, toward the outlet end of the jacket, whereby a feeding progress of the material through the bolt is secured. By adjusting the nut

L the adjusting rod K can be moved longitudinally, so as to alter the degree of obliquity of the vanes in an obvious manner, whereby the rate of feed due to the obliquity of the vanes may be adjusted at will, and while the machine is in motion. The top stave in practice is made blank and solid; but it may be provided to some extent with bolting cloth, if desired. What is termed the cylinder D is not a cylinder in fact, but is generally understood by that name among makers and users of flour-mill machinery. The cylinder shown in the drawings is conical, the large end being toward the receiving end of the machine, and the jacket is conical to conform with the conical arrangement of the cylinder, the cylinder being fitted to adjust endwise in the usual manner, so as to adjust the fit within the jacket, as is common. The tendency of the revolving cylinder is to produce a radial air-blast through the cloth, whereby the finer particles of matter are bolted through, the revolving brushes serving to sweep the surfaces of the cloth and

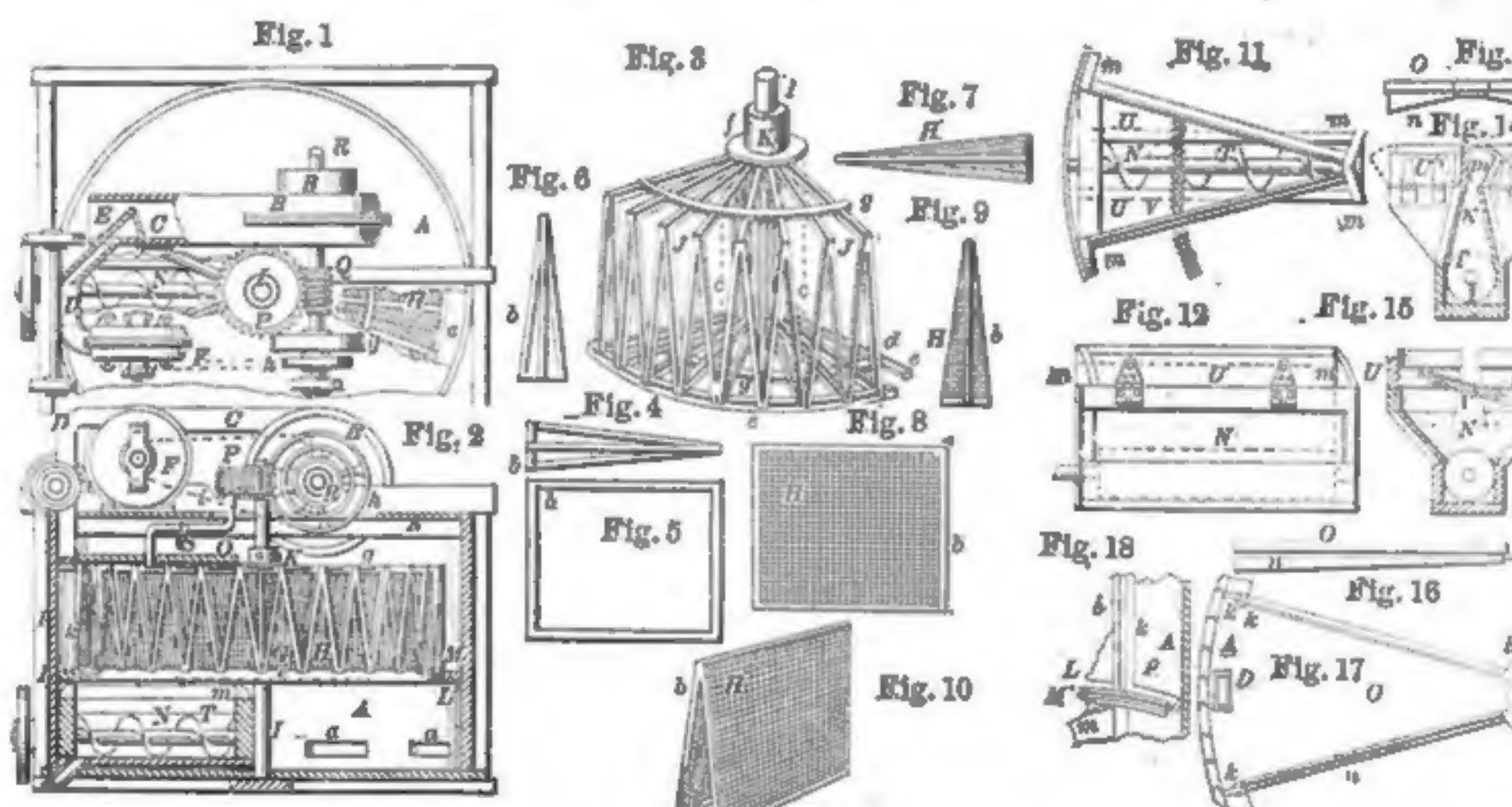
chine at any rate desired, and at the same time to be held in an open and fluffy condition, found in practice to be peculiarly suited to its proper treatment by the brushes.

DUST-COLLECTOR.

Letters Patent No. 308,628, dated December 2, 1884, to George H. Rector, of La Porte, Indiana, assignor of one-half to Wm. H. Bennett, of Chicago, Ill. This invention relates to that class of dust catchers or collectors in which a rotating cylinder or drum is employed to carry the screening material, and is made to travel through a dead air chamber, to permit or facilitate the removal of adhering matter from said screening material. The improvements consist in a novel construction of the drum, whereby a very extended screening-surface is secured within a small space, and in other features and details, hereinafter fully explained and claimed. Figure 1 is a top plan view of machine, partly broken away to show the internal construction; Fig. 2, a side elevation of the same, showing the casing broken away and



PATENT NO. 308,613. CENTRIFUGAL BOLTING REEL.



PATENT NO. 308,613. DUST COLLECTOR.

keep it clean, and aid in the dressing and bolting operation, as is well understood. As the material in the jacket is projected tangentially across the top stave by the action of the cylinder, it tends to advance according to the obliquity of the vanes. By this means is secured the progress of the coarser stuff from the inlet end of the machine toward the outlet end. This manner of producing the feed in machines of this general type is not broadly new. It is essential in this machine that there should be within the jacket a longitudinal air blast in a direction contrary to the onward flow of the coarser matter. The purpose of this longitudinal air-blast in this connection is that the finer matter may be held in suspension, so to speak, by two contending forces, one force tending to feed the material to the outlet of the machine, the other force—the air-blast—tending to force the finer and lighter matter in the other direction. The feeding action is caused to preponderate, and the rate of preponderance is adjusted by altering the obliquity of the vanes. By this means the matter within the jacket is caused to proceed endwise through the ma-

certain parts in section; Fig. 3, a perspective view of a part of the frame of the drum or wheel; Figs. 4, 5, and 6, top, side, and end views of the screen-frames before covering, Fig. 6 showing the inner end of the section; Figs. 7, 8, and 9, like views after covering; Figs. 10 to 18, inclusive, detail views of the various parts, hereinafter referred to and explained. Hitherto star-shaped wheels or drums clothed with screening material and arranged to rotate within a casing containing a dead air chamber, through which the wheel or drum travels, have been employed in machines of this class, in connection with means for drawing a current of air through the porous covering of the wheel or drum into the interior, and thence out at the end or head thereof, and with a hammer to jar the wheel and dislodge adhering matter. Such features, broadly considered, are recognized as being old, and hence are not claimed. Referring to the drawings, A indicates an upright cylindrical casing closed at the top and bottom, but provided with openings a in its sides near the bottom to admit air, which is drawn upward through the case by means of a fan, B, at the top of the casing

through a trunk opening into casing A, and into the fan-casing at or near the center of the latter, and discharge through a spout, C, directly into the atmosphere, or passed wholly or partly down a spout, D, for a purpose presently explained. A valve, E, serves to direct more or less of the air into spout D, or to open the spout C to discharge directly into the atmosphere. F indicates a second fan, which takes air from the atmosphere and forces it through spout or trunk D, either in connection with or independently of a current from fan B. G indicates a rotary drum or wheel composed of a series of sections, H, each consisting of two rectangular frames, b, joined along their upper edges and at their inner ends, but spread apart at their outer ends in inverted form, so that a space is left between the two frames of segmental form longitudinally and of A shape vertically, as well be more readily understood upon referring to Figs. 1 to 10, Figs. 4 and 7 showing a top plan view of a section, Figs. 5 and 8 a side view of the same, Figs. 6 and 9 an inner end view, and Fig. 10 a perspective view of a complete section. The sides and open or wider end of each frame or section are covered with flannel, gauze, or other suitable pervious material. As a consequence of this construction I secure far more surface than is attainable with the ordinary star-shaped drum, first, because a larger number of frames can be used, and, second, because each frame presents double the surface of the ordinary star-wheel sections, beside the portion at the end of the section. Each frame b has its inner end arranged parallel with the axis of a central shaft, I, which supports and carries the wheel or drum; but its outer end being inclined as explained, it of course follows that a slight twist or wind is given to the frame, so light, however, as to offer no difficulty in manufacture and cause no considerable or injurious strain upon the frame. J represents a wheel or skeleton platform secured rigidly to the central shaft, I, and composed of a metal disk, c, having radial arms which support the wooden spokes d, the spokes being bolted or otherwise firmly attached thereto and stayed and kept in proper relation by a circular hoop or band, e, forming the circumference of the wheel or platform, as shown in Fig. 8. The spokes or arms d have their upper faces provided with grooves e', to receive the lower edges of screen-frames b, which may be inserted either in their connected form as completed sections H or separately, in which latter case their upper edges will be subsequently drawn together and united. Each spoke or arm d receives the lower side of two frames, b, as shown in Fig. 3, retaining them in close contact, and properly holding apart the two frames of each section at the lower side. In this way the lower edges of adjoining sections are closely united in the same manner as the upper edges of the two frames of each separate section. The sections, or the individual frames thereof, are pressed and held down to their seats in the arms by a circular plate or disk, K, provided with a hub or sleeve, which encircles and slides freely upon shaft I, except when made fast thereto by means of a set screw, f, with which it is furnished, or by equivalent means, and annular bands g serve to tie the sections together and retain each in proper relation to the others. L indicates an angular ledge or rib projecting inward from the inner wall of the casing A, and provided with a packing strip, M, of felt, leather, rubber, cloth or other material adapted to rest against the face of band or rim e of wheel G, and to form an air-tight joint therewith, without producing wear or friction sufficient to interfere with the efficient operation of the machine. The wheel G is raised up somewhat from the bottom of casing A, and beneath it is placed, within the casing, a depositing

chamber, N, of segmental form, and including about one-eighth of the circle of the casing ordinarily, hence covering about three or four sections, H, of the wheel at a time. It will of course be understood, however, that the size and relative proportions of this chamber to the wheel and casing may be varied as required, the above being found advantageous in practice. Above the wheel or drum G is placed a board or guard, O, corresponding in size and location with the chamber N, the board and the walls of said chamber preventing the upward passage of air through the meshes of those screens which are for the time included within their limits, and thereby forming a dead-air chamber, so that the matter adhering to the under sides of the screens may be readily jarred from them. The wheel or drum G is rotated by gear-wheel P, which receives motion from a worm or screw, Q, on the shaft R of fan B, said shaft being furnished with a series of pulleys, h, by which motion may be imparted thereto, as required. In order to jar the drum or wheel G to detach adhering matter therefrom, the under side of wheel P is provided with a series of cams, i, which ride one after another over the upper arm of a bent lever or hammer, S, pivoted in a suitable support, and, passing off the same, permit the hammer to descend through an opening in guard O and strike upon the annular hoop or band g at the upper side of the wheel directly over the chamber N. Since there is no upward suction through the screens at that point the material is readily detached; but to make such detachment, and to clear and open the meshes of the screens more perfectly, the space between the casing and the drum or wheel G included between the walls of the chamber N is closed up by boards or plates, which are provided with padded faces, or with yielding packing-strips k, to bear against the periphery of wheel G and produce a tight joint. The spout D is then extended into the chamber p thus formed, so that the air from fan F and such part of the current from fan B as may be delivered into spout D shall enter said chamber p and pass through the screening material of wheel G in a downward direction, or a direction opposite to that in which the air passes in the rest of the casing. In this way all particles not removed through the jarring action of the hammer S are blown off by the blast through spout D. The

hammer S and the counter-blast of the fan or fans act only on that portion of the wheel or drum within the dead-air chamber, or over chamber N; hence the material detached falls directly into the same, whence it is carried off by a conveyor, T, or in any equivalent manner. In order to secure a close and air-tight joint between the walls and sides of the chamber N and the lower side of the wheel or drum G, said walls are provided with hinged upper sections or valves, U, which are held up against the under side of the wheel or drum by springs V, as shown in Figs. 11 and 15, the upper edges of said valves being provided with strips of felt, rubber, leather, or like yielding material, bearing against the face of the wheel and effecting a close joint. The inner and outer ends of the hinged valves U work against quadrant shaped boards m, which prevent the entrance or exit of air or dust at those points, as shown in Figs. 2, 11, 12, 14, and 18. For a like purpose the guard or board O is furnished with a depending curtain, n, which may be of sheet-rubber, canvas, or any other suitable material, as shown in Figs. 17 and 18. The dust and other matter collected in chamber N are discharged through the outlet-spout W. The machine constructed as above explained is found in practice to be extremely efficient and to perform a large amount of work in a given time. It may be used alone or combined with other apparatus for grinding, purifying, or otherwise treating grain or its products.

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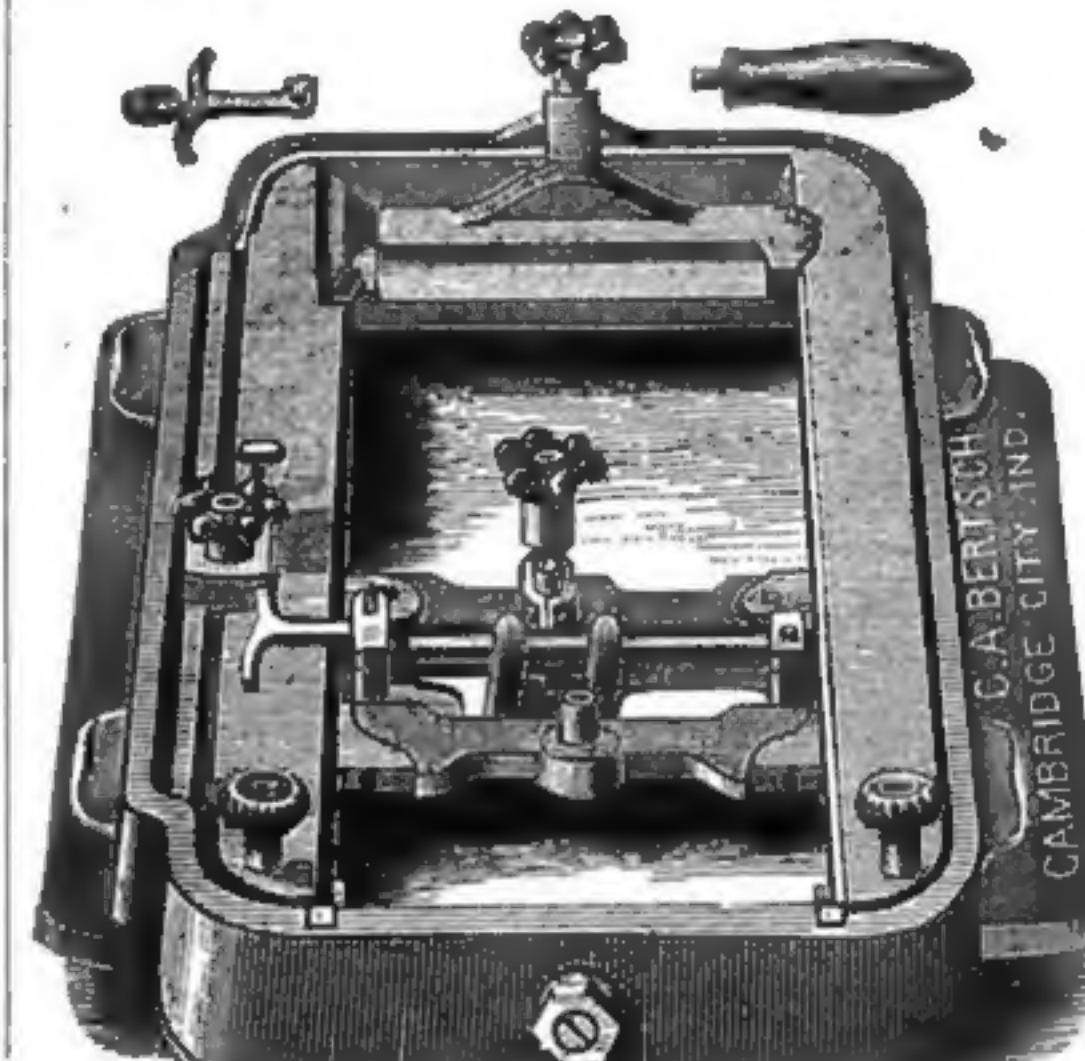
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BOILER INCRUSTATIONS.

From *Die Masche*.

III.

VERY useful suggestions have been given in this connection by Dr. Ganswindt. He advises the use of a cheap, distilled water, and advocates the collection of the exhaust steam by a system of pipes, in this way procuring distilled water cheaper than appears possible at a superficial inspection. He calls attention to the immense quantities of distilled water that are puffed into the air every day, a waste for which he cannot find an excuse. A condenser applicable to the purpose of collecting the exhaust steam is described as follows: A basin or reservoir of a capacity equal to that of the boiler used, is constructed in a cool place, subterranean if possible, of iron or cement, and a series of pipes bring the exhaust steam into this condenser. The pipes leading into it must be as long as possible, to enable the steam to cool and arrive at the condenser at a low temperature. The feed pumps of the steam plant then draw their supply from this reservoir, and the deficiency is made up by collecting rain water.

An anti-scale remedy, which has so far been employed successfully only by one firm, is copperas in solution. The resulting hydrated peroxide of iron takes up all the substances held mechanically by the feed water. Sulphate of lime and magnesia formed in this manner, remain in solution until the boiler water becomes too much concentrated; any crystals of gypsum which may form, are surrounded by the hydrated peroxide, and kept floating in the water, instead of being deposited at the bottom. The resulting slime and mud can be blown off without any difficulty.

A method recently proposed by Mr. Zuehdorf seems very simple and very rational. A portion of the exhaust steam is led into the water reservoir, and warms it to a temperature of 105° F. From here the water is pumped or led into another reservoir in which additional exhaust steam increases the temperature to about 125° F. From here the water is pumped into the feed water reservoir, where its temperature is again increased, so that it boils when pumped into the boiler for use. In such a manner the water is thoroughly purified, and after six months trial the inventor found only a very thin layer of scales in the most exposed parts of his boiler.

In place of the chlorbaryum and lime, recommended by De Haen, Dr. Heinzelman uses soda and lime milk. He requires two, at times three reservoirs to receive the sediments, and recommends the following test method: 50 g. of fresh lime are slaked and thinned out by additional water to produce a quantity of fluid exactly one liter; 50 g. soda are also dissolved in one liter of water; 10 liters of the water to be used are then mixed with 20 ccm. of the lime milk. After thoroughly mixing, two samples are drawn off; filtered lime water added to the one, and the water to be used in the boiler is added to the other. If the first samples appear turbid, the addition of lime milk has been insufficient; if the second sample turns turbid, the quantity added has been too large. In this manner the quantity necessary for the thorough purification of the water can be determined without any difficulty, *i. e.*, until both samples remain perfectly clear. In a similar manner the quantity of the soda solution necessary is determined until a sample does not appear turbid when filtered and warmed. From the quantity of lime and soda used to purify the 10 liters of water, it is easy to compute the quantity necessary to purify the con-

tents of a reservoir. The deposits resulting from the application of this method can be utilized for manure on soils poor in lime, and for various other purposes.

Reviewing our past experience in this field, we must conclude that an important step has been taken in the right direction, in spite of the large amount of quackery on the market; and that a careful selection of one or the other method can govern, at least in part, the formation of boiler scales.

THE UTILIZATION OF COAL WASTE.

An interesting paper on the utilization of coal waste was recently read before the Scranton, Pa., Board of Trade, by Col. J. A. Price. The writer does not expect any success in the manufacture of artificial fuel owing to little or no profit in competition with the mines. A few years ago "chestnut" was the smallest size, while now are screened "pea," and "buckwheat" and "pin head" is contemplated. By the application of blasts and mechanical grates the finely sub-divided coal may be consumed, and manufacturers may in future seek the location of the culm deposits as sources of power as water-power has been sought. The writer is satisfied that coal dust properly mixed with air and blown into a combustion chamber, is the true method of firing, and when mechanical means are better developed it will prove by far the most economical. Such a consummation would render the immense culm deposit of great value, and inventors will do well to take a hint from this article. Col. Price makes an original suggestion in use of coal dust as a fertilizer. While carbon in this form may not have fertilizing properties in itself, the color imparted to light soils will promote plant growth, as making it a better absorbent of sun heat. For this reason, the writer states, the season begins earlier and lasts longer on soils naturally dark. Culm will also render the soil more porous, a better absorbent, lighten up heavy soil, and generally promote better drainage. Perhaps, as suggested, the great waste coal banks may have an important agricultural use. The matter is worthy of investigation by our agricultural experts.

* * * Natural gas, as a factor in iron manufacture, is still growing in importance, despite its drawbacks. That it has its drawbacks is now pretty generally known. Not the least of these is the irregular and insufficient supply, on account of which suits for breach of contract against the Fuel Gas Co., of Pittsburgh, are said to be imminent. That it is, under some circumstances, a dangerous element is shown by the increasing number of accidents from its use, among iron workers, and the regulations imposed upon its use by the insurance companies. Both of these sources of hazard are, however, the natural concomitants of the first use of a new element in manufacture, and may be expected to be eliminated by constantly improving appliances. The new fuel, also, is to be charged with complicating the mining situation, but we suppose manufacturers are not interested in that, aside from getting cheap coal. Meanwhile other localities are reaching eagerly after the new *ignis fatuus*. Cleveland manufacturers and citizens have put down several wells, one of them giving out a very strong flow of gas, but as yet it has not been put to practical application. At Findlay, Ohio, gas has been struck at a depth of 1,100 feet, the flow of ignited gas reaching a height of 75 feet. Youngstown, Ohio, apparently convinced that gas cannot be struck in paying quantities there, proposes to pipe its gas from Butler county, Pa., the cost of piping from Centerville, Pa. (26 miles) being put at \$6,000 per mile. The well at Canton, Ohio, has reached a depth

of 2,250 feet; without result as yet. At Morgantown, W. Va., preparations have been made to bore for the deceptive element. All of these experiments will be watched with interest by manufacturers, but we do not look with confidence for their entire success.

* * * The largest stationary engine in the world is in Lehigh county, at the famous zinc mines at Friedensville. The engine is known as the "President," and as now run with sixteen boilers is of 5,000 horse power. With double the number of boilers the capacity of the engine is 10,000-horse power. There is no pumping engine in the world that can be compared with the monster. At every revolution of its ponderous wheels it throws out a little river. The number of gallons of water raised every minute is 17,500. The engine works with a smoothness that is astonishing, and there is not the slightest jar observable in any of its parts in the engine house. Previous to March last it had been idle for a period of seven and a half years. Since then it has been run day and night without a hitch. Twenty-eight tons of buckwheat coal are consumed by the boilers every day. The engine, as it is generally run, makes seven revolutions per minute, but the speed can be increased to fourteen revolutions. The driving wheels are twenty-five feet in diameter and weigh forty tons each. The sweep rod is forty feet long, the cylinder 110 inches in diameter, and the piston-rod eighteen inches in diameter with a ten-foot stroke.

* * * Dr. Baker, of the Michigan State Board of Health, suggests the following simple tests for drinking water: Color—Fill a bottle made of colorless glass; look through the water at some black object; the water should appear perfectly colorless; a muddy or turbid appearance indicates the presence of soluble organic matter, or of solid matter in suspension. Odor—Empty out some of the water, cork up the bottle and place it for a few hours in a warm place; shake it; remove the cork, and if the odor is in the least repulsive, the water should be rejected. By heating the water to boiling an odor is evolved that otherwise does not appear. Taste—Water fresh from a well is usually tasteless, even though it may contain a large amount of putrescible organic matter. Water for domestic use should be perfectly tasteless, even after it has been warmed. Heisch's test for sewage contamination: Fill a clean pint bottle three-fourths full of water, dissolve a teaspoonful of loaf or granulated sugar, cork the bottle and place it in a warm place for two days. If the water becomes cloudy or muddy it is unfit for domestic use. If it remains perfectly clear, it is probably safe to use.

* * * When a leather belt has been slightly injured by rain or by being wet in any other manner, it should be dried as much as possible and laps that may have started can

be fastened by a little cement, the composition of which, as follows, is furnished by the Page Belting Company: Equal proportions of good glue and Prussian gelatine dissolved in water, and cooked in a tin vessel set into a larger one containing water. Do not allow the vessels containing the cement to set quite on the bottom. It should be cooked until it is quite thick andropy; it can then be worked into the places where the laps are started by means of a knife. The belt should then be hammered until dry and a few pegs may be used, which can be obtained from any local shoemaker. Cut the pegs off a little from the surface on the reversed side, and hammer them down on a flat iron, anvil or lap stone.

* * * Dr. Goessmann, of the Massachusetts Experimental Station, has been experimenting with gluten meal as a food for milk production in connection with shorts and English hay. He succeeded in one case, with gluten meal at \$22.50 per ton, wheat bran at \$25, and hay \$15 per ton, by feeding in the proportion of 3 1/4 pounds of gluten meal, 3 1/4 pounds of bran and 20 pounds of hay, in producing milk of good quality at 1.88 cent per quart. In another trial, when he used 6 1/2 pounds of gluten meal, 3 1/4 pounds of bran, and 18 4-7 pounds of hay, the milk cost 1.82 cent per quart. He also found that another cow, with the feeding ratio first mentioned, produced milk that cost 2.24 cents per quart; and still in case of another, fed the same ration, the milk cost 2.81 cents. Altogether, the Professor concludes that gluten meal is a valuable and economical food. This is not the refuse of the starch and sorghum-sugar factories, sold in a moist state, but the finer parts obtained in the manufacture of these articles, thoroughly dried and ground.

* * * It often occurs in establishments supplied for the first time with electrical appliances that engineers and others are placed, after a short period of instruction, in charge of dynamos and electric motors. To these men, experienced as they may be in steam engineering, the introduction of electrical terms and the unfamiliar names given to machines and their parts are mystifying. In one of our large factories, after the dynamos had run only a few hours, the bearings of the commutator showed signs of heating. Following out the practice pertaining to similar difficulties in the steam engines, the engineer tried the effect of plumbago mixed with lubricating oil. The result might have been expected; the plumbago applied to the commutator being an excellent conductor, a short circuit was formed, rendering it necessary to stop the dynamo until the difficulty was remedied.—Ex.

* * * The total shipments of coal from the port of Buffalo for the season so far is 1,854,540 tons against an aggregate for the entire season of 1883 of 1,253,940 tons, showing an increase thus far of 100,600 tons.

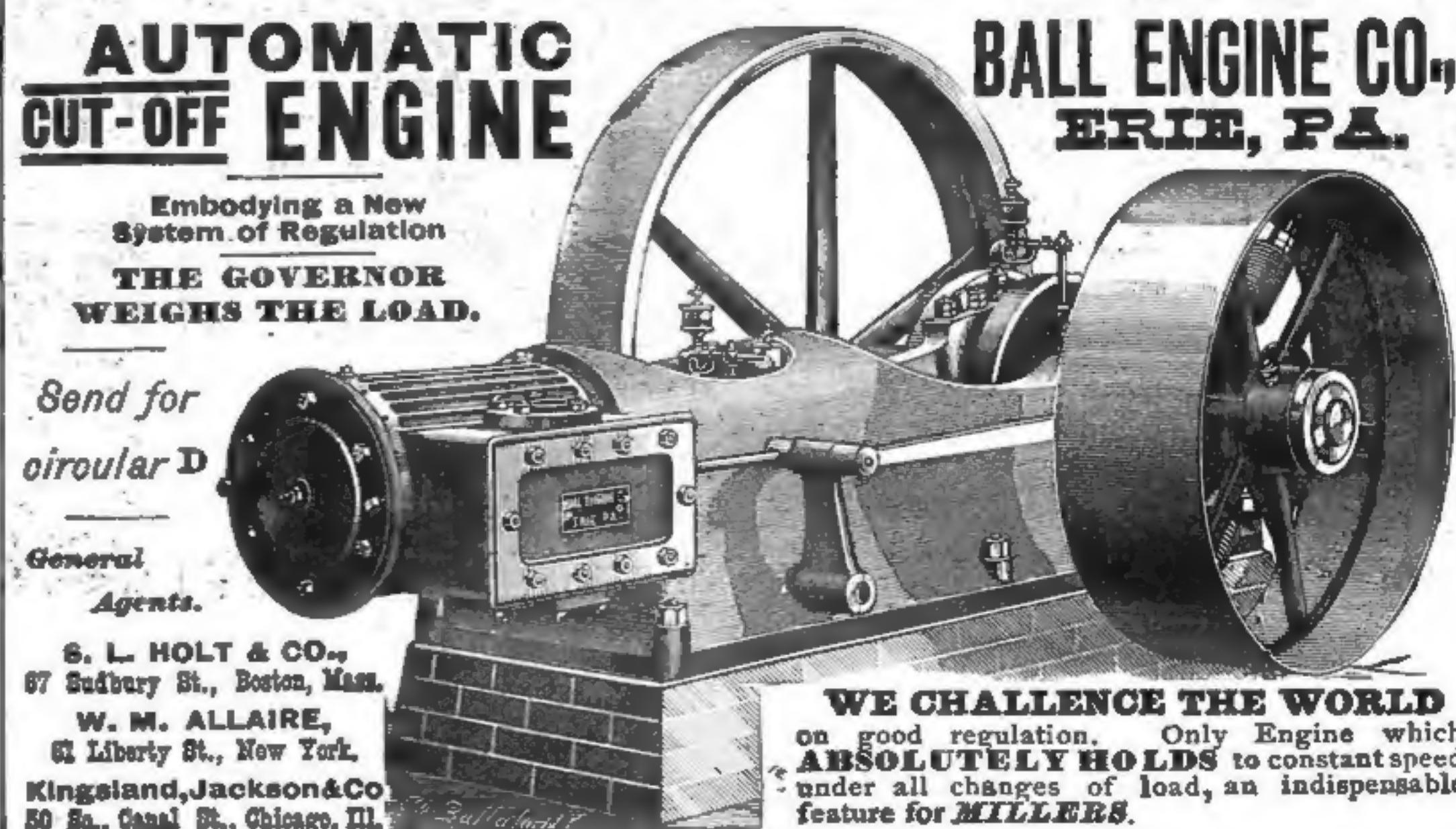
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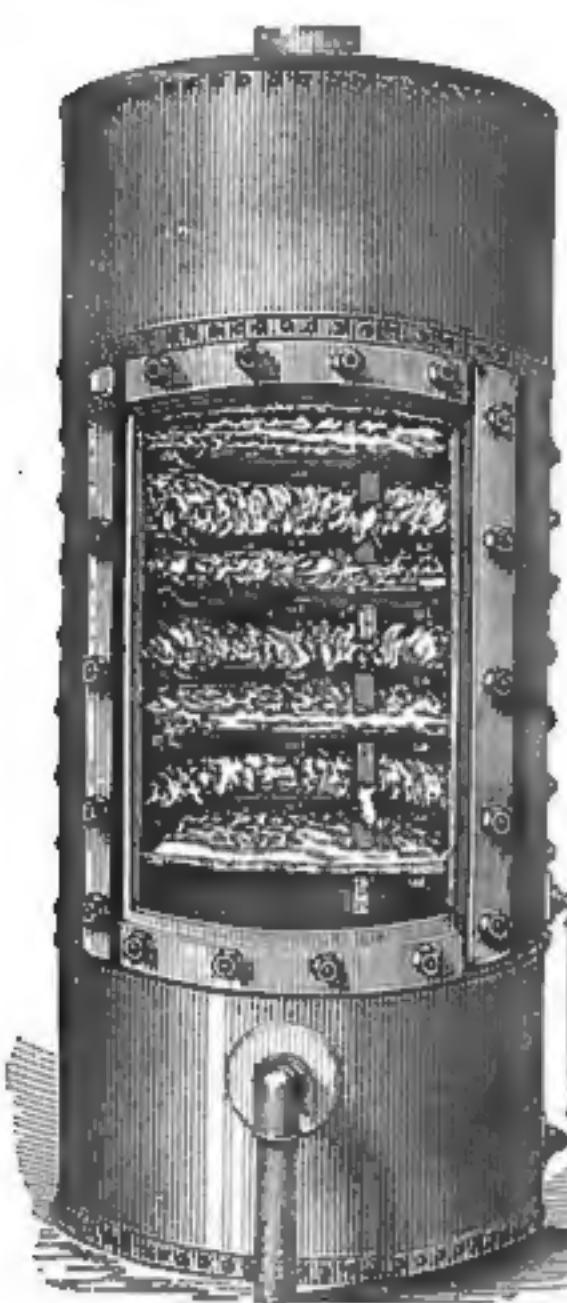
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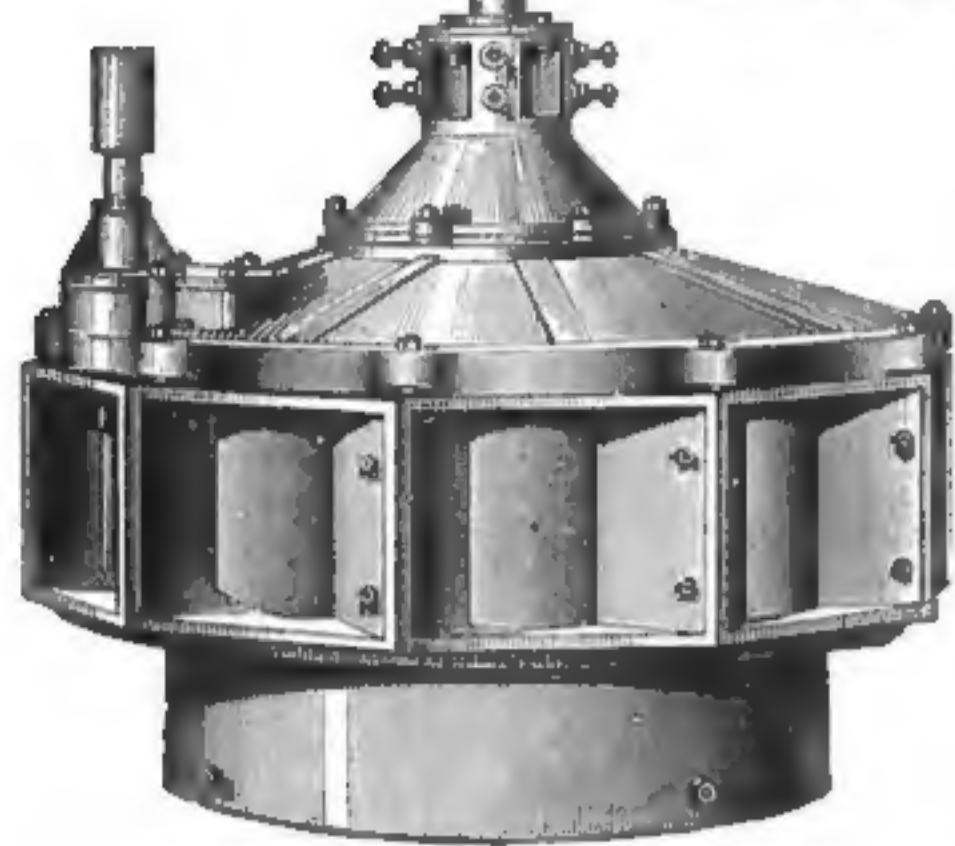
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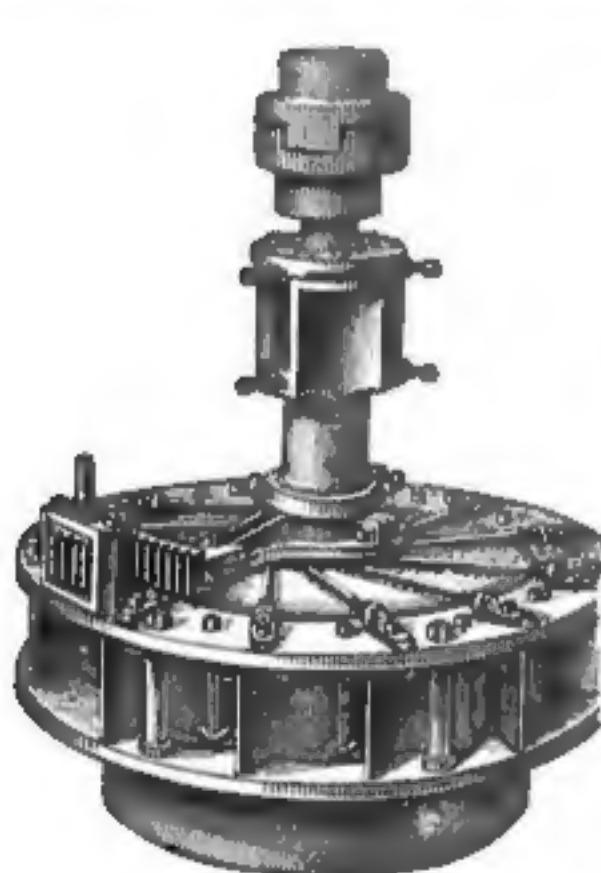
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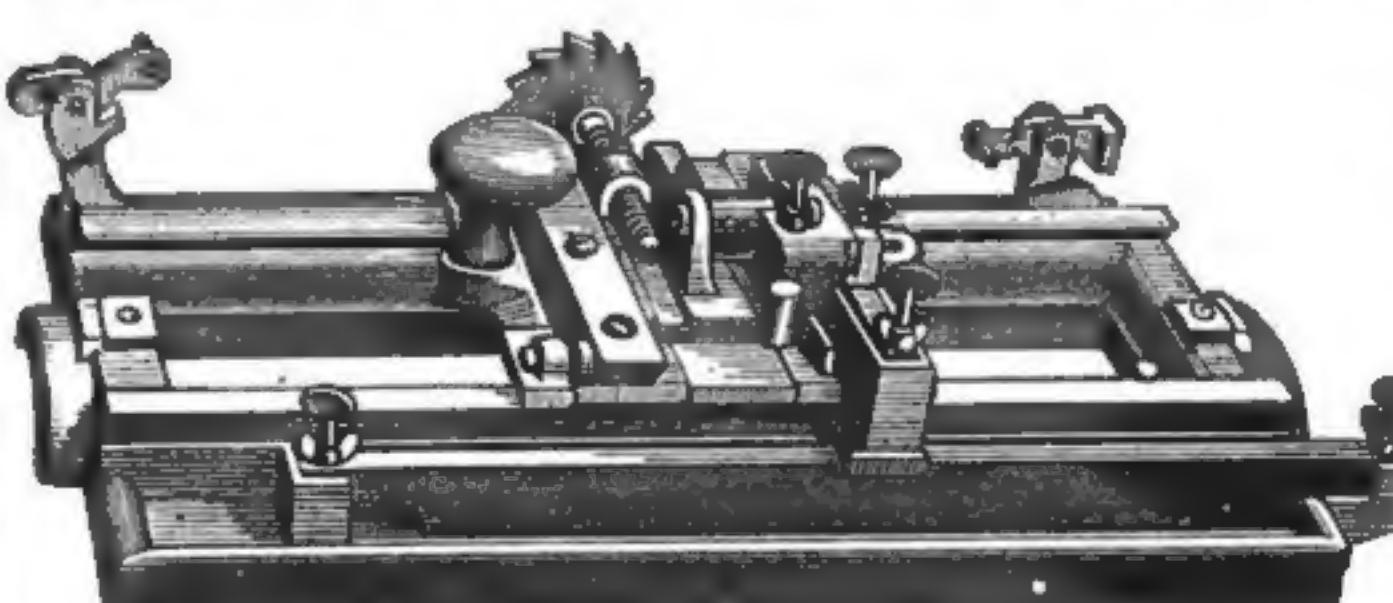
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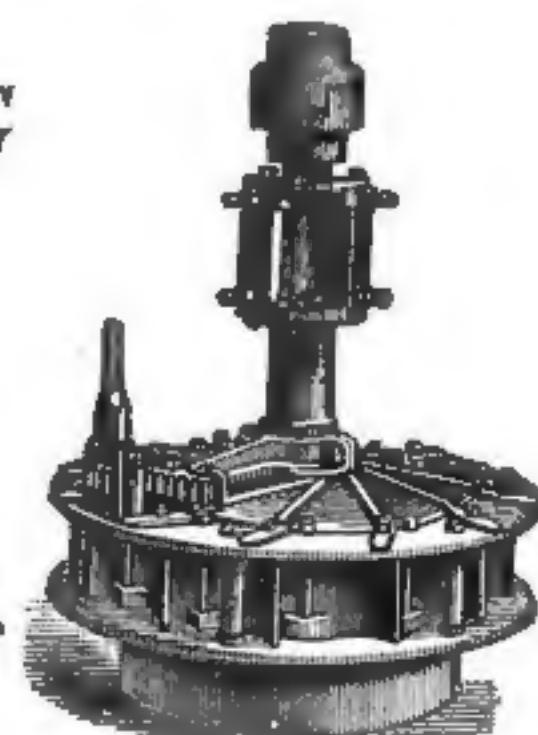
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Notes from the Mills.

HARVEY'S NEW MILL.

The Canton, Ohio, *Repository* thus describes this establishment: On the night of the 3d of November, 1883, an alarm of fire brought out the fire department, as well as a great throng of people. A few hours after the alarm was sounded the large flouring mill of Mr. George C. Harvey, located southeast of the city, was a mass of ruins. It was a sad blow to the gentleman, who knew not what to do. After some length of time Mr. Harvey purchased a piece of property at the southeast corner of Walnut and Ninth streets, and the past spring commenced the erection of a new mill, which is quite an improvement to that part of the city. Now that everything is in working order, a representative of the *Repository* called at the mill to-day, and was shown through. It is without a doubt one of the finest mills in this section of the state, and a credit to our thriving city. The machinery, or system of milling, is the most important item to be decided upon when building a mill, consequently Mr. Harvey visited several mills and examined the different systems, finally deciding upon putting in the machinery of the Case Manufacturing Company, of Columbus, Ohio. Mr. C. E. Canan, agent for the company, planned the mill, and also had charge of the specifications. The millwrighting was under the supervision of Mr. Henry Bederman, of this city, to whom much credit is due. The building is of brick, 36x50 feet, a twelve foot basement and three stories above. In the basement a fifty horse power engine is located; also a Deal California magnetic separator; a Deal California magnetic smutter and separator combined; a Deal California magnetic brush finisher and separator combined, manufactured by M. Deal & Co., of Bucyrus, Ohio. They make a perfect and complete system of cleaning, the work being unexcelled. A wheat sink, capacity one thousand bushels, the boots of the elevators and necessary machinery is also located in the basement. On the first floor there are six double sets of Case Bismarck rolls, built by the Case Manufacturing Company, one thirty inch under runner Munson buhr, for corn; one Eureka flour packer, and the necessary scales for weighing. In the northwest end of this floor the office is located, which is connected with the telephonic exchange. On the second floor one six reel chest, one two reel chest, and one No. 1 double and one No. 1 single Case purifier is located. Also one five reel scalping chest and bins necessary to hold the different products and bins capable of holding five thousand bushels of grain. On the next floor we find two No. 1 Case centrifugal reels, one No. 4 Prinz dust collector, the heads of all the elevators and other machinery necessary to operate the mill. When the mill started, nearly three months ago, not a change had to be made, and since that time everything runs along smoothly, which speaks well for the Case Manufacturing Company. The mill has a capacity of one hundred barrels every twenty-four hours, and Mr. Harvey turns out his celebrated "Sunlight" flour, unequaled in America, which has a large sale in this and adjoining towns. The mill is in charge of Mr. H. R. Desler, which goes a good ways in aiding toward the undoubted success of the mill, as he is an experienced miller.

HOMINY MILLERS MEET.

A meeting was held in the gentlemen's parlor of the Southern Hotel, St. Louis, on Wednesday evening, Dec. 10, which was more important than the small number present would seem to indicate. The gentlemen, thirteen in number, represented the hominy milling interests of the country, and among the leading concerns who had sent delegates were the following: C. P. Hall & Co., Indianapolis; Nurhardt & Sons, Terre Haute, Ind.; Robbins, Sheppard & Co., Baltimore; H. Bates, Indianapolis; Robert Marye & Co., Baltimore; Shelby & Sope, Henderson, Ky.; Turner & Marshall, Henderson, Ky.; Mr. Mugg, Lafayette, Ind.; George P. Heilman & Co., Evansville, Ind.; Dorchester Milling Company, Cambridge, Md.; Norfolk City Mills, Norfolk, Va.; West Point Mills, Charleston, S. C.; Engelke & Feiner, Southern Mills, James Lockwood, W. Od-Maude Milling Company, and G. M. Flanagan, Mississippi Valley Mills. When the convention was called to order, Geo. J. Heilman, of Evansville, was elected temporary chairman, and Geo. N. Flanagan, of St. Louis, secretary. The object of the meeting was stated to be the formation of a permanent organization, the better acquaintance among the hominy industry, by which their in-

terests may be protected. Another purpose in calling the convention was to check, if possible, the reckless cutting of prices which has been going on. An interchange of views occupied two hours, and then, by a unanimous vote, the permanent organization was effected. The association will be known as the Hominy Millers' Association of the United States. Mr. Geo. J. Heilman was chosen as the first president of the new organization, and Mr. Geo. N. Flanagan as secretary and treasurer. It was decided to invite all hominy millers to become members, and an effort will be made to induce every hominy grits manufacturer to join the organization. The hominy millers employ a capital of over \$2,000,000, and, while there are half a hundred small concerns, the delegates to this convention produce two-thirds of all the hominy used in the United States.

A NOVEL PROJECT.

Mr. Cyrus W. Field, the widely known New York millionaire, the man who laid the first cable across the Atlantic, and Mr. A. G. Mowbary, the progressive and well known Minnesota miller, until lately superintendent for the Winona Mill Co., Winona, Minn., have joined hands, and have begun the construction of what is to be the largest and finest corn grits and cornmeal mill in the country. Nothing short of the best mill with the best results, would be appropriate to Mr. M., who, it is well known, stands at the top of the ladder. These gentlemen have placed the entire contract for the machinery and full equipment, in the hands of the Case Manufacturing Co., of Columbus, Ohio. The reductions have to be gradual, and are to be made on "Bismarck" rolls, and a general system of scalping, purifying and separation is to be followed, much the same as in wheat milling, the reductions and separations, of course, to be adapted to corn. There is just now quite a demand for purified cornmeal, and the market for it seems to fully justify this scheme. There is said to be more difference between gradual reduction cornmeal and the old product, than between roller and burr wheat flour; scalping and purifying between reductions seems to be quite as important as in wheat milling. The eyes of the milling and produce world will be on this particular enterprise, and it is expected that much will be developed by it. The mill is to be located a few miles outside of New York city. The work will be supervised by Mr. E. Corbett, of Sandusky, Ohio, who is a master builder, and has been identified with the Case Co. for many years.

THEY WANT A FLOUR MILL.

The question which is now agitating the minds of our citizens, says the Ahnapee, Wis., *Record* is: Shall we have a merchant mill? All agree that such an institution is a necessity. How to secure it without being compelled to contribute enough to make it a burden is the question. We are reliably informed that a firm who have a first-class roller mill with a capacity of grinding about 100 barrels per day, are willing and anxious to remove from their present location to this city, provided we pay the expense incurred in effecting the removal, and donate them a desirable site for their mill in the city. The expense our citizens would be called upon to pay would be trifling when the advantages that would accrue to them through such a course are considered. For once we should lay aside all selfishness and indifference in this matter, which is not one of personal accommodation to any one person in the city but of necessity to the general welfare of the whole place. Whatever contributions anyone makes in a move of this kind should not be considered in the light of a donation, but as an investment that will ultimately, directly or indirectly, make them a handsome return. Our leading business men should take the initiative, and call a meeting to discuss the matter in all its bearings and make the firm a definite offer. Now is the time to secure a merchant mill, and an effort to bring about such a result should be made at once, and should not be opposed by a single citizen.

Seven pairs of rolls and other machinery will be put into the mill of Gray & Fisher, Lawrence, Mich., by the Case Mfg. Co., of Columbus, O.

Buffatt & Son, of Knoxville, Tenn., have concluded to put in one pair of rolls, with patent automatic feed. The Case Co., Columbus, O., have the order to supply the same.

The Case Mfg. Co., Columbus, Ohio, have an order from N. S. Maity, Greenwood, Ind., for one "Little Giant" break machine, one improved centrifugal reel, and other machinery.

The Northern Pacific Elevator company will send to the New Orleans show a perfect miniature elevator with engine, and all prepared to illustrate the workings of the real institutions.

The Case Mfg. Co., Columbus, O., have secured the contract of Stanley & Bickle, Glenwood, Mo., for a full line of rolls, purifiers, centrifugals,

scalpers, etc., for a complete gradual reduction mill, on the Case system.

An order has been received by the Case Mfg. Co., of Columbus, Ohio, from the Lehman Grinding Disk Co., Kansas City, Mo., for one pair of rolls, with patent automatic feed, for Bowman Bros., Pawnee Rock, Neb.

The Kehlor flouring mills, of Edwardsville, Ill., started up December 12, after an idleness of nearly a month, occasioned by putting in additional machinery. They will run full time, their present capacity being 600 barrels per day.

The Everest Elevator and Mill Company, of Everest, Kan., has had a judgment for \$50,000 entered against it. The sheriff has attached the property, and a mortgage has been foreclosed. The business was commenced in March, 1882.

Owing to the large increase of business, the Duluth Board of Trade will, after Dec. 10, hold two sessions daily. The total shipments during the year up to the close of navigation were 11,447,000 bushels, an increase of 5,000,000 over 1883.

The large grain elevator of Armour, Dole & Co., on Sixteenth street, Chicago, partly collapsed on Dec. 8, permitting 15,000 bushels of wheat to escape, but which was partly secured and stored in an adjoining warehouse. The total loss will not exceed \$10,000.

L. C. Lillard & Co., Marion, Ind., have placed an order for a full line of breaks, rolls, purifiers, centrifugals, scalpers, bolting reels, etc., for a complete gradual reduction mill on the Case system, using twelve pairs rolls. The Case Mfg. Co., of Columbus, Ohio, will do the work.

The feed mill of Phelps Bros. at Money Creek near Caledonia, Wis., was consumed by fire, together with contents, including \$3,000 of produce, upon which there was no insurance. The building was insured for \$1,000 and was mortgaged to Mons Anderson of La Crosse for \$1,500. The loss is about \$5,000 and is regarded as a public mishap and a company will be formed to rebuild it immediately.

Under the new freight arrangement, buyers of corn in Kansas can afford to pay about 17 cents per bushel, which, with 14 cents charges, will make the corn cost about 31 cents laid down at Chicago. It is thought in Chicago that a good deal of corn can be bought on this basis: or, in other words, that the receipts may be expected to show some improvement now that feeders have about got through with buying for their stock.

The old Atlantic mill, at St. Louis, which has been twice destroyed and twice rebuilt, has at last ceased to exist, and in its place the Regina Mill, owned and operated by the Regina Flour Mill Company, will start up about January 1. Louis Fusz will probably be president of the company, and George Bain, the former proprietor of the Atlantic mill, will have an interest in the new concern and manage its business. The mill is named the Regina in honor of Mr. Fusz's mother, and also in deference to those Spanish-American countries with whom the new concern hope to do an extensive trade.

Manager Hubbard, of the Minneapolis Millers' Association, says the difference in prices at St. Vincent and Emerson is only temporary. There has been no buyer at Emerson until recently, and the difference in price was probably paid in order to attract the attention of farmers to that market, and make trouble for the St. Vincent buyers. There is no good reason why there should be so great a difference. As to the complaint about the price of wheat at Rush City, Mr. Hubbard says the Millers' Association has no buyer there. They withdrew their buyer some time ago because the wheat was so poor in quality it could not be used to good advantage in the mills.

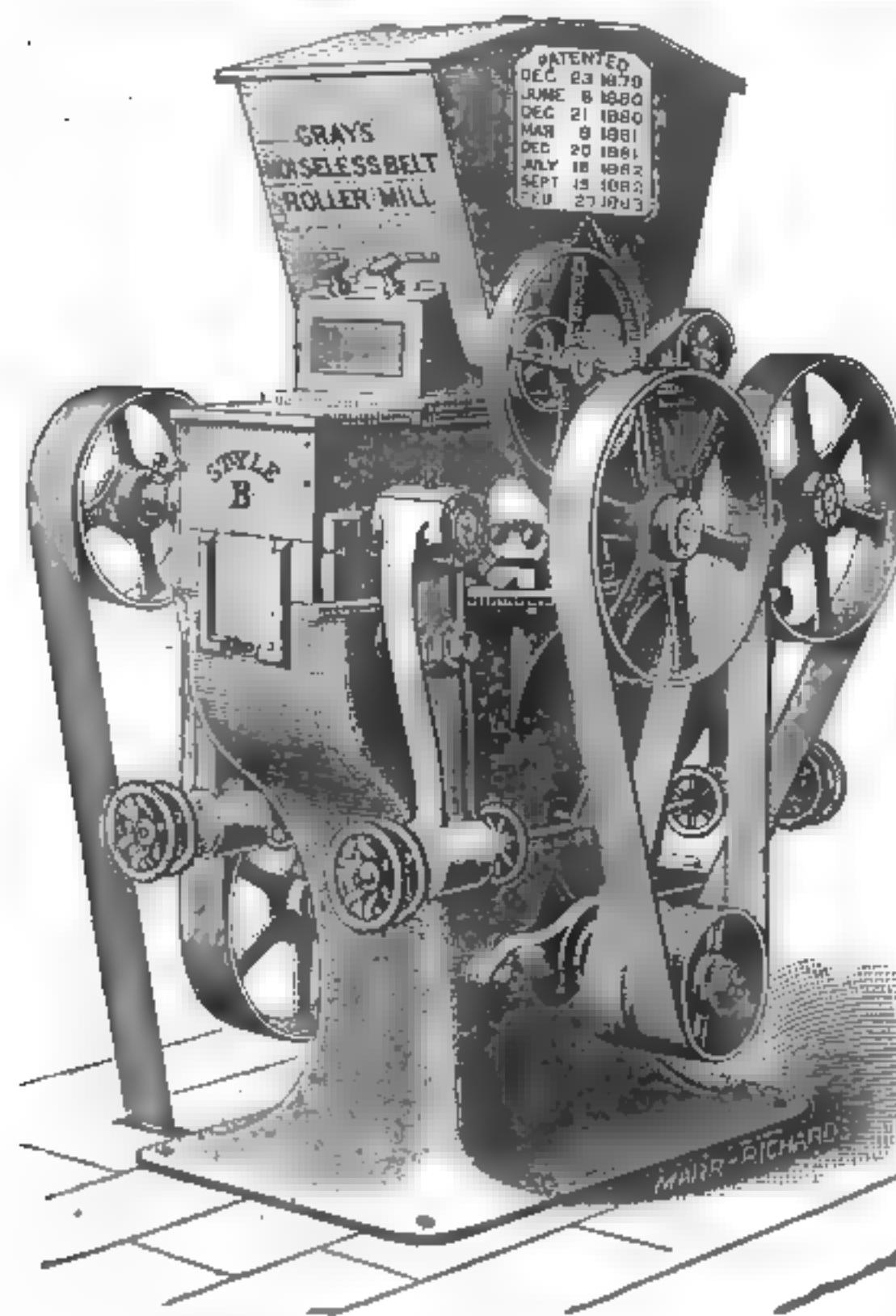
Collector of Customs Bookwalter of Pembina says the farmers in his section are still holding large quantities of wheat, only offering for sale that which they are compelled to in order to provide for pressing necessities. The Red River Elevator company is the largest purchaser now in the market. But little wheat is graded as No. 1, and this is rated at 44 cents. Most of the wheat purchased is graded as No. 1 straight, and commands 40 to 43 cents per bushel. On the Canadian side the ruling price is 56 cents, but the customs fee of 15 cents per bushel makes it impossible for American farmers to take their wheat across the line and realize a satisfactory profit. Mr. Bookwalter was not prepared to express an opinion as to the benefits, if any, to accrue from the work of the recently organized Canadian wheat syndicate, but he does not believe American farmers will be benefitted to any great extent.

Is the present low price of wheat due, in part at least, to exaggerated crop reports? It is alleged that, in order to "boom" the Territory, Dakota farmers have been declaring that they can raise 40 bushels per acre, at a cost of 45 cents a bushel,

and have also misrepresented the area under the crop. If they have offended in this respect, they have met speedy punishment, as No. 1 Hard—the best grade—is selling, in many parts of the Territory, for 47 cents, and No. 1 "regular," for 42 cents a bushel, while for wagon-loads of wheat seeking a purchaser the other day at St. Vincent, Minn., the prices offered were from 27 to 37 cents a bushel, mostly 27 cents. Across the line in Manitoba, Canada, similar exaggeration is said to have been practiced; but the Manitoba farmers have an advantage, as the rates for transportation on the Canadian Pacific Railroad are from 10 to 100 per cent. lower than those on our own Northern Pacific, according to distance. Prices north of the line are therefore considerably higher than those south of it, so that some Dakota farmers find it better to sell their wheat in Canada, after paying 15 cents a bushel duty, than to dispose of it at present Dakota prices, or wait till the millers shall decide to offer higher figures.

I have it from good authority, says a correspondent of the *Lake Superior News*, that almost one half the wheat of the crop of 1884 has been marketed so far. Farmers are trying to hold back their wheat on account of the low prices, but it goes to the elevators little by little. Receipts at Duluth for the week have averaged 170,000 bushels per day, and there seems to be no immediate prospect of their growing very much less. There is little doubt that more elevator capacity will be needed and built next season, possibly in the shape of storage houses by the companies here, possibly by new corporations entirely. A prominent railroad official who has the best opportunities for knowing whereof he affirms, says there are from five to seven million bushels of wheat yet to come to Duluth from the line of the Manitoba road alone, and the question is, how to secure storage room. Leaving out the Duluth & Western building, there is storage capacity here of about 5,000,000 bushels, over half of which is already taken up, and at the present rate of receipts, every nook and corner will be full by January 5th. It would seem that there must be fully as much wheat on the line of the Northern Pacific as on the Manitoba, and if so the situation is interesting. Not only is the tide of wheat setting this way in an immense flood, but the roads leading to the southwest are desirous of commencing hauling corn here by January 1st, if they can get storage for it. They prefer to get the long haul this way rather than take it a few miles to the Chicago roads, especially as they can get lumber freights at paying rates from Duluth to the southwest. One proposed way of relieving the storage difficulty is to put up five or six sheds, to hold half a million bushels each. There will be eight or nine million bushels of grain in store here by the first of next May, and more if it is possible to provide storage in excess of that amount.

Wheat will be fed to stock this year very much more generally than would appear from ordinary observation. It is healthy and productive of good results when fed, from cattle down to poultry. When chopped and fed to beef cattle, for instance, it will cause them to put on flesh rapidly, and thus return two-fold in comparison with the ordinary market price for wheat. Occasionally a farmer will be found who avers that he can raise wheat profitably at ninety cents a hundred. It will be seen, however, that such men have large ranches, and raise, in most instances, nothing else in any quantity. For an ordinary farmer, then, it is much more remunerative to feed wheat than sell it at the price we have quoted. An exchange says regarding this: "A more pressing point for farmers to consider just now is the utility of making use of a great deal of their wheat crop at home for stock-feeding purposes, instead of pressing it on the market under the disadvantageous circumstances now existing. Wheat meal may be made an admirable substitute for oil cake in fattening cattle and sheep; hence those farmers who have been accustomed to make heavy outlays in the purchase of oil cake for winter feeding of stock, will act imprudently if they do not abandon the system this year and fall back on their heavy stock of home-produced wheat as a substitute. Wheat meal is reckoned even better than barley meal for pig feeding, and it would be economy to keep back nothing but tail barley for pig consumption this season, marketing the whole of the head corn and making use of wheat largely for the production of pork. Prices of store pigs have been low for some considerable time, and remain so at present. Farmers of an enterprising turn will take advantage of this circumstance by buying largely store pigs, and converting them into pork, chiefly by the consumption of wheat meal. In some instances ranchmen have organized and purchased a feed mill, as in the case of the Platte Valley Grange, with results beneficial to all concerned. Wheat turned into beef is more profitable than when sold to the millers, and, this being so, it requires no Solomon to decide as to the best manner in which to dispose of it."



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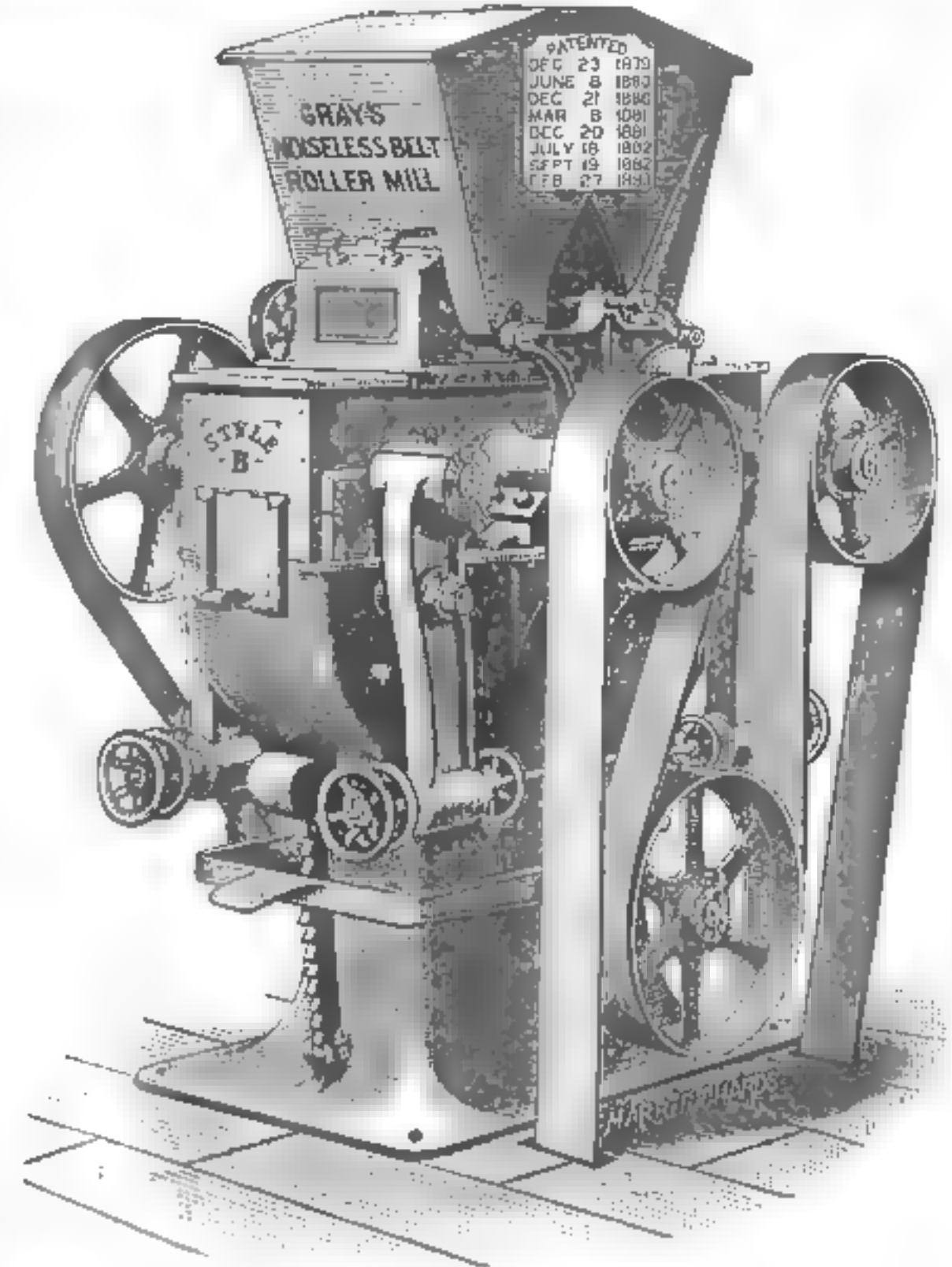
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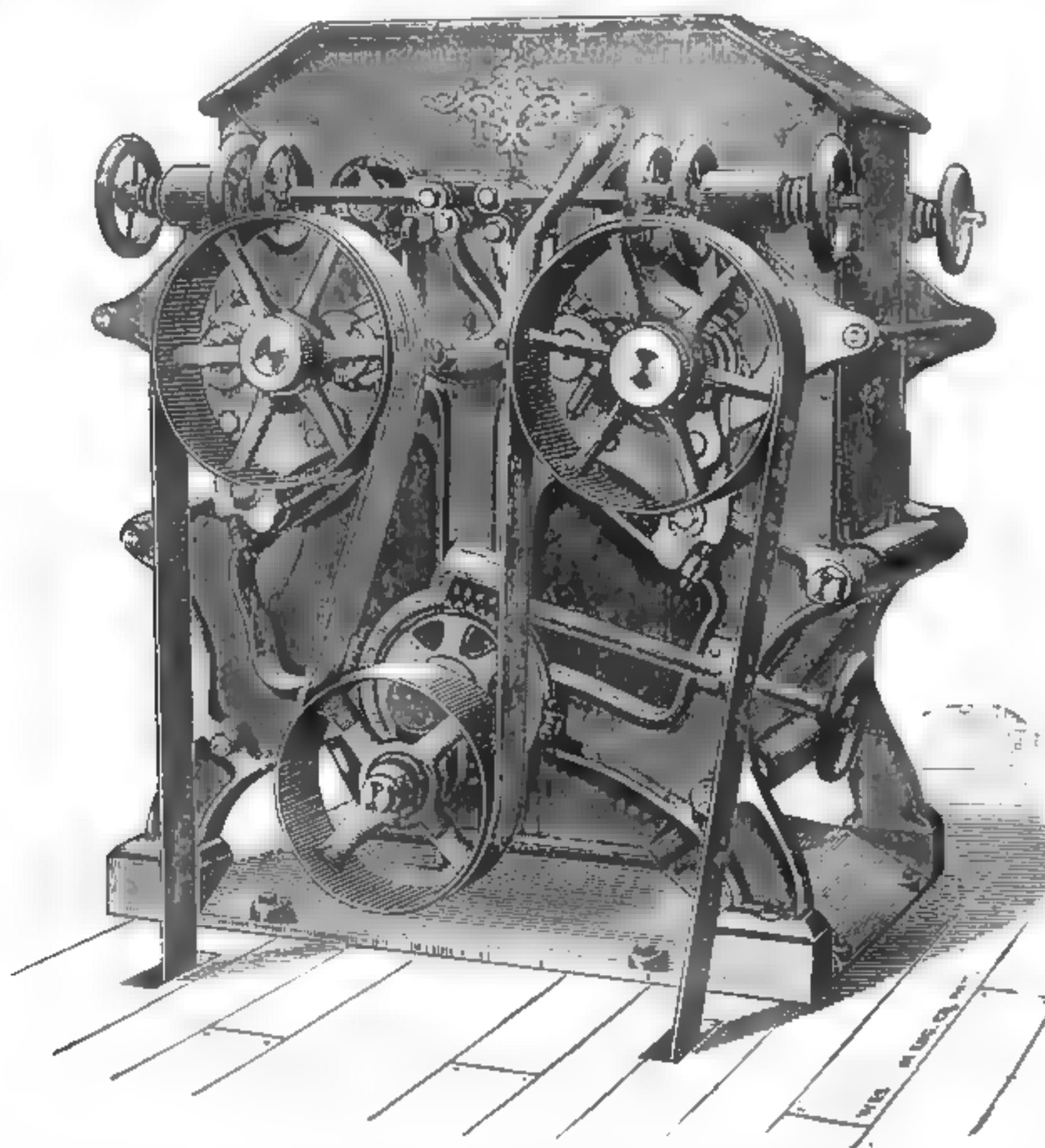
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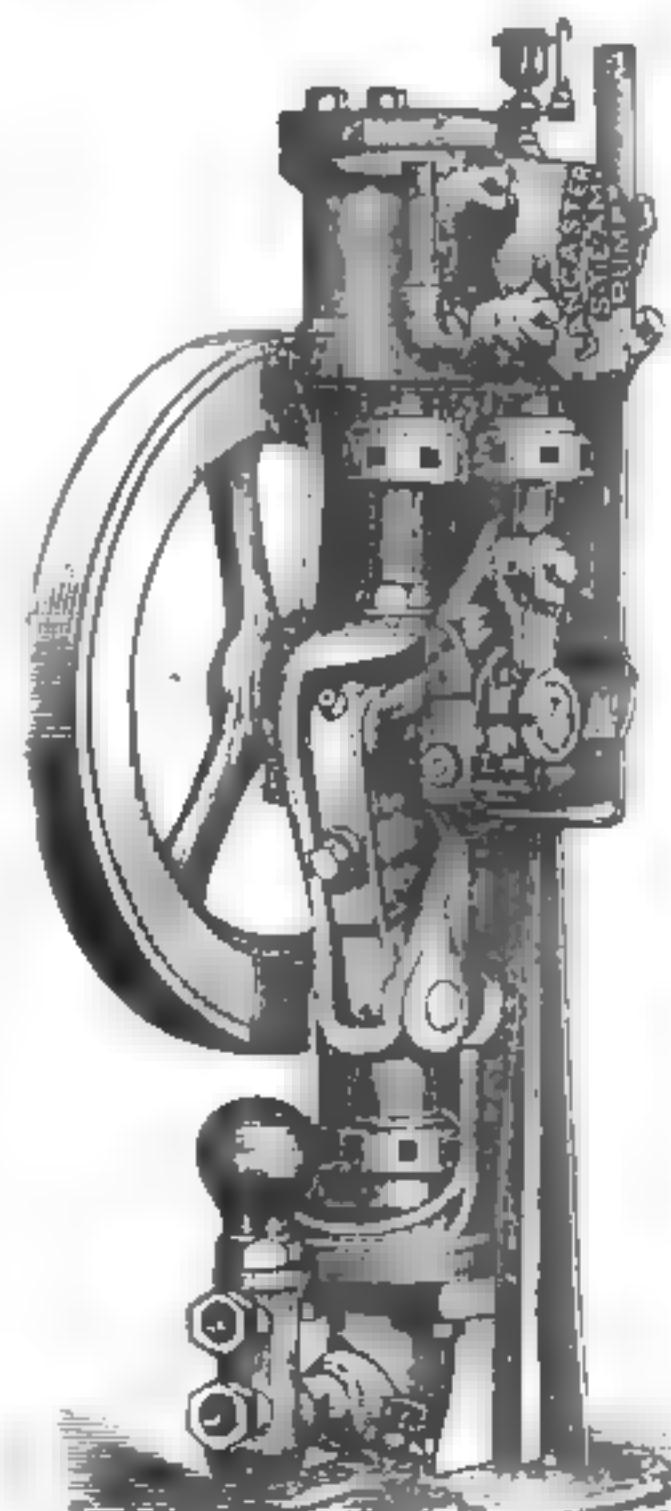
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THE INTERNATIONAL MILLING AND BAKING EXHIBITION IN PARIS.

THE following is translated from a circular by M. Lockert, printed in Pappenheim's Mueller Zeitung with regard to the proposed exhibition at Paris from May 1 to Oct. 31. "It has been demonstrated that the French milling industry is passing through a crisis, depending upon various conditions. First of all we have heavy rents, high priced agricultural labor and bad harvests during the latter years. When we look at the production of grain we must not ignore the fact that we imported in addition to 12,000,000mtc grain, 300,000q. flour during 1883. Our mills, which until recently took the lead in Europe to such an extent that our flours were demanded everywhere on foreign markets, have been surpassed now and foreign flour is sold at a profit in French markets. The population of France consumes annually 60,000,000q. flour, at a price of 1,900,000,000 francs, from which sum foreign countries obtained last year 8,000,000 francs. Of course, this is only a small fraction of the whole, but it will increase if our millers persist in retaining their present methods. Increase of tariffs will be a useless remedy.

To make the proposed exhibition a success, the millwrights of England, Austria, America, Belgium, Germany and Switzerland will undoubtedly keep up their established reputation, especially as they know that France offers a vast field to their trade. They will exert a healthy stimulus upon our own mill constructors, and induce them to make extra exertions in order to have the trade remain in the country. Even if we are forced to admit the superiority of our foreign competitors, we are obliged to inaugurate this exhibition as the best means to reveal to us our shortcomings and enable us to form some idea about the forces necessary to reconstruct our suffering industry."

The exhibition is to be divided into eight sections. 1. Milling proper, with all the necessary separating, cleaning and accessory machinery. Millstones of all forms, and materials, and the different sharpening apparatuses; chilled iron disc mills, horizontal and vertical; degermination machinery. Smooth and corrugated chilled iron rollers; steel, porcelain, quartzsand and glass rollers. Bolting machinery. This first division will be the most complete; arrangements have been made for the erection of a number of complete mills and an engine of 100 horse power has been placed at the disposal of this division.

Divisions 2 and 3 relate to baking; 4 to miller's and baker's architecture; division 5 relates to motors and will have a complete mill operated by water power. Division 6 is given to the transmission of power by belts, pulleys, etc. Division 7 relates to hygiene, flours and fruits, and finally, 8 represents the literature of the industry.

Lectures will be held on grain, flour, railway and canal transportation, taxes, insurances, etc., etc. The square meter of space in the halls is sold for 30 francs; in the gardens, parks, etc., 10 francs. Articles to be placed on exhibition are received between March 15 and April 15; none later. Additional particulars can be obtained by addressing Mons. Louis Lockert, 24 Rue Norvins, Paris.

NOTES.

The British National Association for Promoting Technical Education appointed a deputation to visit the continent of Europe, for the purpose of reporting upon the technical instruction given to

the industrial classes in Germany, France, Switzerland, and elsewhere, and the influence of such instruction upon manufacturing and other industries at home and abroad.

The building of a railway through the great St. Bernard mountain is under discussion in Switzerland. Application has been made to the Federal Council, for a concession.

On the 21st of last June a new patent law was issued in Sweden, which law will take effect on the 1st of January, 1885. The principal feature of this law is that all patents will be granted for a period of fifteen years with yearly payments. Patents granted previous to 1885 may, upon special application to the patent authorities, be prolonged fifteen years from the date of the expiration of the patent.

The latest news is that the Congress of the Argentine Republic has declared as valid and in force the guarantee of the Eastern Railway, of Entre Rios, in which North American capitalists are largely interested. The charter was granted in 1872, by the state of Entre Rios occupying the valuable country between the Uruguay and Parana rivers. The railway proposed to be built under this charter is to run from Gualageychu to Concordia.

The late official returns show that since the beginning of the present year the State Department of Germany has acquired the ownership of the following enumerated lines, viz.: Upper Silesian; Breslau-Schweidnitz-Freiburg; Posen-Creuzberg; Oderline-Right-Bank; Altona-Kiel, and the Schaumburg-Lippe portion of the Hanover-Minden. These lines have a length of 3,698-72 kilometres, which makes up the total length of lines held by the state to 18,924.43 kilometres, and leaves only 1,700 kilometres in the possession of private corporations.

The Genie Civil gives the following description of a floating elevator recently built in Antwerp: The elevator is built on a flat-bottomed vessel with two hulls entirely of iron, 125 feet long, 33 feet wide and 12 feet deep. The vessel is divided into four water-tight compartments with bulkheads running from bottom to deck. The tower is 76 feet high, 25 feet in diameter at the base and 18 feet at the top. The capacity of the elevator is about 150 tons of bulk wheat an hour. It cleans the grain, and weighs it either automatically or by hand in sacks or in bulk. It has double horizontal engines of 80 horse-power.

Information has lately been received from Rio Janeiro that the Brazilian government has removed the duties on coal. This action will no doubt result in increasing the consumption of fuel in the Empire; and as parties in Alabama have recently begun the shipment of coal to Central America as an experiment, it is to be hoped they will extend their experiments farther south, and determine if it is not possible to compete with Great Britain for this trade. At present the quantity of coal imported into Brazil is not large, amounting to but 64,332 tons during the first eight months of the present year. As compared with the corresponding period of the previous year, this is an increase of 18,000 tons. At all events, the trade is worth competing for.

Reporting upon the state of trade, the *Australasian Trade Review* of the 22d September last writes: "The volume of business done in many lines for the season of the year is not regarded as satisfactory, and there is evidence of a disposition to restrict transactions. The drouth of last season, which swept away a third of the flocks in the interior, has never been thoroughly broken up, and the adverse climatic influence is now being felt in Victoria. For several months past the rainfall has been inadequate, and the effects of this condition are now becoming manifest. Without being inclined to encourage undue forebodings, we think it certain that unless a change occurs shortly the outlook for nearly every crop will be decidedly bad, and to judge from news received from southwestern Queensland down to Victoria, it would appear reasonable to expect a season of disasters generally. The dry cycle has evidently reached an extreme point."

At a meeting of the Farmers' Alliance, of Great Britain, on Nov. 16, when Mr. Bear read a very interesting and able paper on "Agricultural Depression," Mr. Gardner proposed as an amendment to a resolution made by Dr. Clark, of Hove, that "in order to afford farmers a reasonable prospect of meeting the increasing foreign competition, all burdens borne by them, which are not charged on foreign and colonial farmers, should be taken off, or an equivalent import duty placed on foreign corn, till such burdens are so dealt with." The amendment was supported by only two or three of those present. Mr. W. Fowler, M. P., remarking that all ideas of protection must be given up, as no statesman would be found bold enough to propose it in Parliament.

The original motion of Mr. Clark was carried almost unanimously, and was to the effect that "the burdens of farmers should be eased by a substantial reduction in their rent, and by giving them complete security for all improvements, with freedom to make improvements, to crop their farms and to sell the produce according to their own judgment, under a reasonable liability for depreciation."

The great project for a continuous line of railway from London to Bombay is calculated to extend a distance of 7,000 miles, which, it is expected, will be traversed in nine days, at a rate of 35 miles an hour. An eminent French engineer has undertaken the surveys, assisted by several competent English engineers. The section extending from Tangiers to Cairo will take three years in construction. It is expected that the whole line from Tangiers to Bombay, Calcutta, and Madras, will be ready for traffic within five years. It is designed to start a special mail train from London to Bombay every second day and an express train every day. It is not stated how the trains will be taken across the straits from Dover to Calais, or whether a submarine tunnel is included in the plan. It will now be in season for our American projectors, says the *Railway World*, to expedite the contemplated line to Russia via Alaska and Behring Straits, so as to ultimately connect with the Indo-European, and thus substitute the dangers of the rail for the perils of the sea.

ALCOHOLISM IN SWITZERLAND.

The following is the view taken of the advantages of alcoholic drinks by the Federal Council of Switzerland, in a blue book recently issued by them: "It is doubtless possible to discuss and talk without drinking or confining oneself to tea or coffee; but everyone knows by experience that after a hard day's work when one feels overwhelmed by professional cares, it is impossible to bring a cheerful temper into the society where we amuse or naturally encourage each other unless one indulges in a glass of generous wine or refreshing beer, which effaces the traces of daily labor, and opens the heart to other impressions. Can anyone deny the necessity of these reunions for the development of our public life in general? Can anyone deny that in many localities and for many people the relations of sociability are inti-

mately associated with the life of the public-house? Can anyone deny that the numerous societies formed either for recreation or amusement, or for the purposes of discussing measures which concern subjects of general interest, that the extension of popular rights and the development of the press, are not each and all so many reasons for increasing the frequenting of houses of public resort? If we deplore the excess of drinking, which is often the consequence; if we blame those who spend uselessly their time and money in gossiping, in talking public-house politics, and in card-playing, we cannot disguise from ourselves, on the other hand, the stimulating influences of the reunions on the intellectual activity of many, nor the good fruits they often bring to the public interest. As much as we sympathize with those whom the craving for drink has thrown into the arms of madness or has led to suicide or crime, we must not forget that in the public-house is to be found a social life that is an efficacious remedy against hypochondria and misanthropy, as well as against egotism, vanity, narrowness of ideas, and extravagance of imagination."



DeLOACH WATER WHEELS.

Simplest and Cheapest Manufactured, and have received the unanimous endorsement of all who have used them. Every small Mill can afford one. Send for large Illustrated Catalogue of Wheels and general Mill supplies. "The Star Mill" Mill stones from our quarry are unsurpassed and sell remarkably low. A. A. DeLoach & Bro., Atlanta, Ga. U. S. A.

THE "SALEM" ELEVATOR BUCKET.

SHOVEL EDGE
Seamless Rounded Corners
CURVED HEEL.

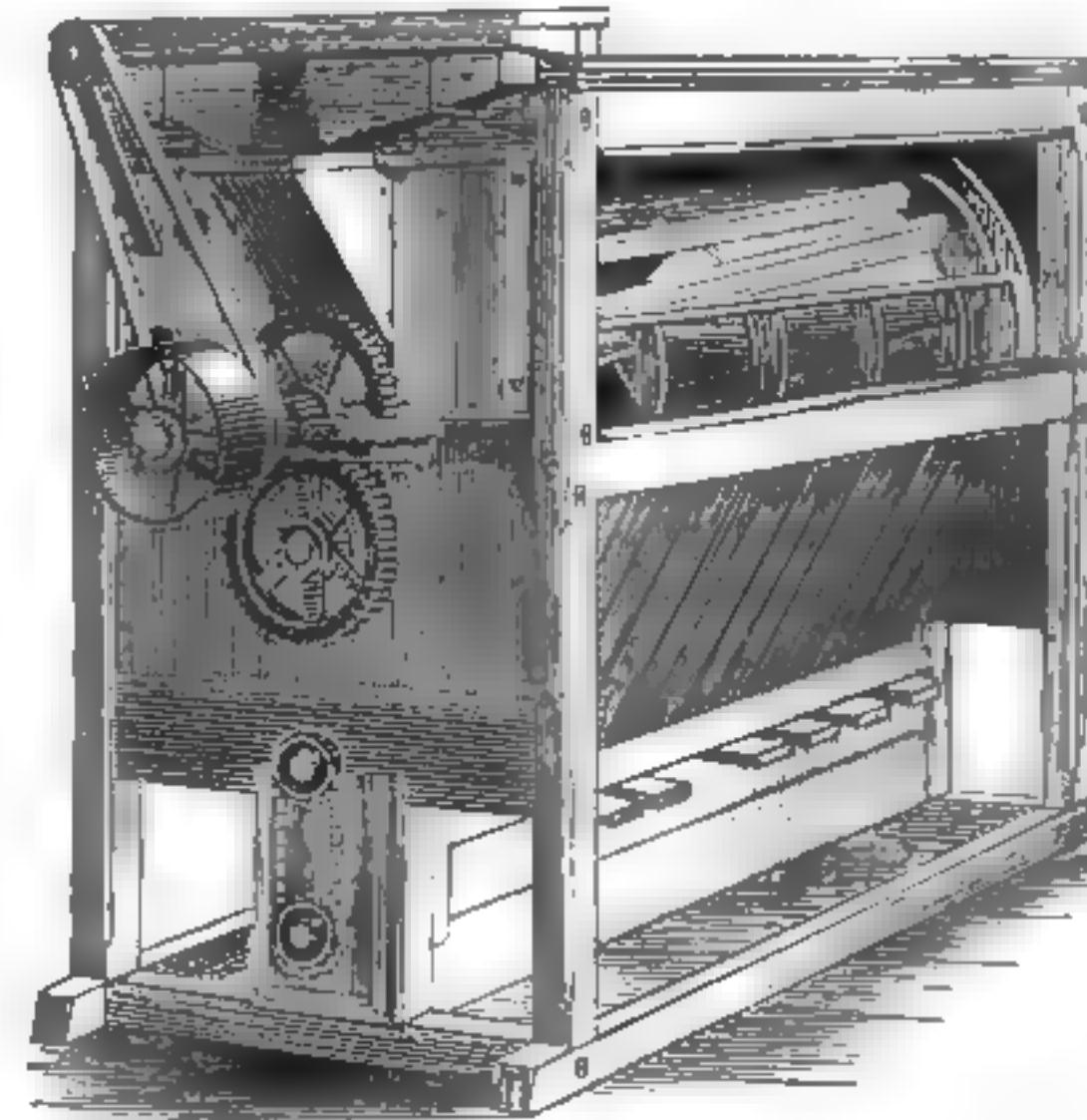


RUNS EASY
STRONG & DURABLE
EMPTYES CLEAN.

W. J. CLARK & CO., MANUFACTURERS, SALEM, OHIO.

New York Office and Salesroom, No. 9 City Street.

C. N. SMITH'S CENTRIFUGAL REEL



BEYOND QUESTION THE
BEST IN THE MARKET
AND IS SOLD FOR
THE LEAST MONEY
While the operation of every
Machine is
FULLY GUARANTEED.

Send for Prices, Lists of
Testimonials, and Descriptive Catalogue.

READ THIS LETTER. THEY WILL DO AS WELL FOR YOU.

MR. C. N. SMITH.

We have been running the two Centrifugals since February, the first without any stop whatever, and are well pleased with them. We throw less stock on our Rolls, and make four to five per cent. less Low Grade than before we had the Machine. You can refer any one to us and we will be pleased to give it a good send off. Yours respectfully,
CHAS. SHUEY, Head Miller.

OFFICE OF LUDLOW MILLS, DAYTON, OHIO, April 28, 1884.

Yours respectfully,
CHAS. S. DURST, Supt.

MANUFACTURED ONLY BY

C. N. SMITH, DAYTON, OHIO
MANUFACTURER OF MILL FURNISHINGS.

TOOL FOR CUTTING, LEVELING & POLISHING THE FURROWS & FACE OF MILLSTONES

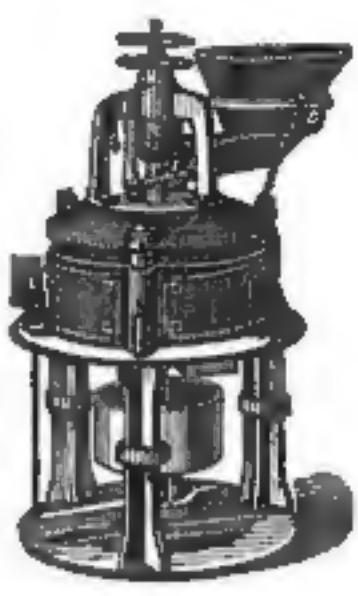
Eight inches long, 2½ inches wide, 1½ inches thick. Received the highest and only Award given to Polishers at the Millers' Exhibition, Cincinnati, Ohio, June, 1880. For facing down high places on the buhr, this tool has no equal, and can be done much better and in one-sixth the time than with the mill pick. It is much larger, cuts better, can be used on either face or furrow, can be used until the corundum is entirely worn out on one side and then turned on the other side. Has over four times the amount of corundum and when the corundum is worn out can be replaced in the handle at a small cost. Sent by express, \$5.50. Satisfaction guaranteed, or money refunded. Address



Buckwheat Refiners & Portable Mills



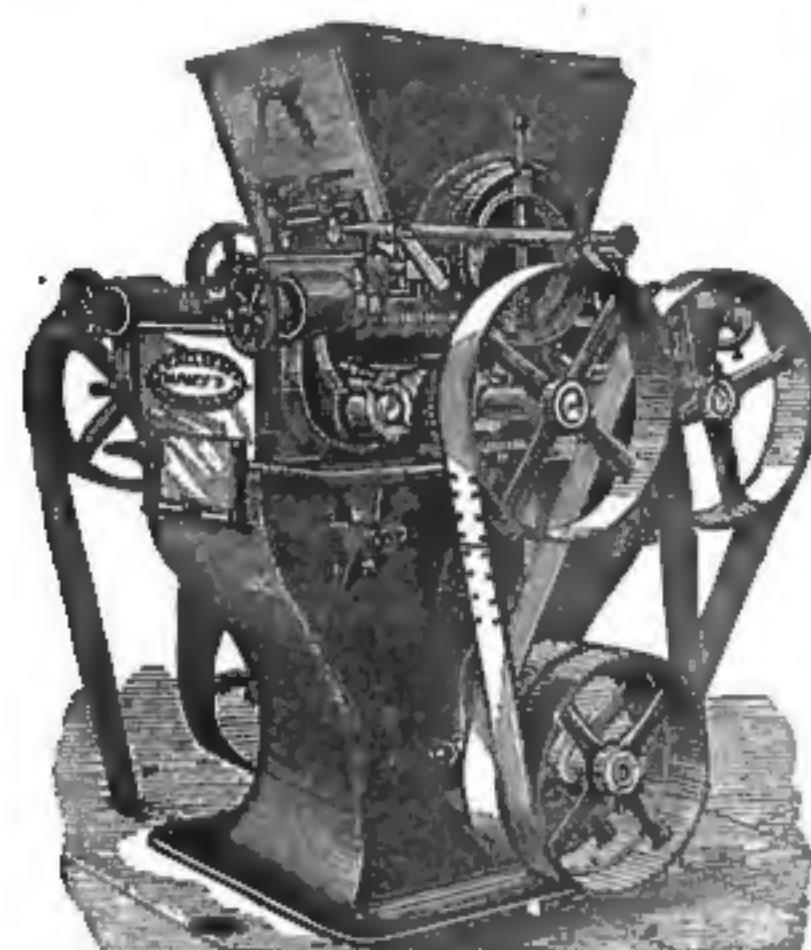
THE POSITIVE ADJUSTMENT
AND AUTOMATIC
MIDDLEDGS MILL
Is Strictly Self-Protecting
The Best Adjustment in
the World.
And the only
Perfect Granulator
Grinds Cool, Self-Oiling, Great
Saving of Power.
Simplicity and Durability
Combined.



Satisfaction Guaranteed on all our Goods. Send for Descriptive Circular, giving Prices, Sizes, Terms, etc.

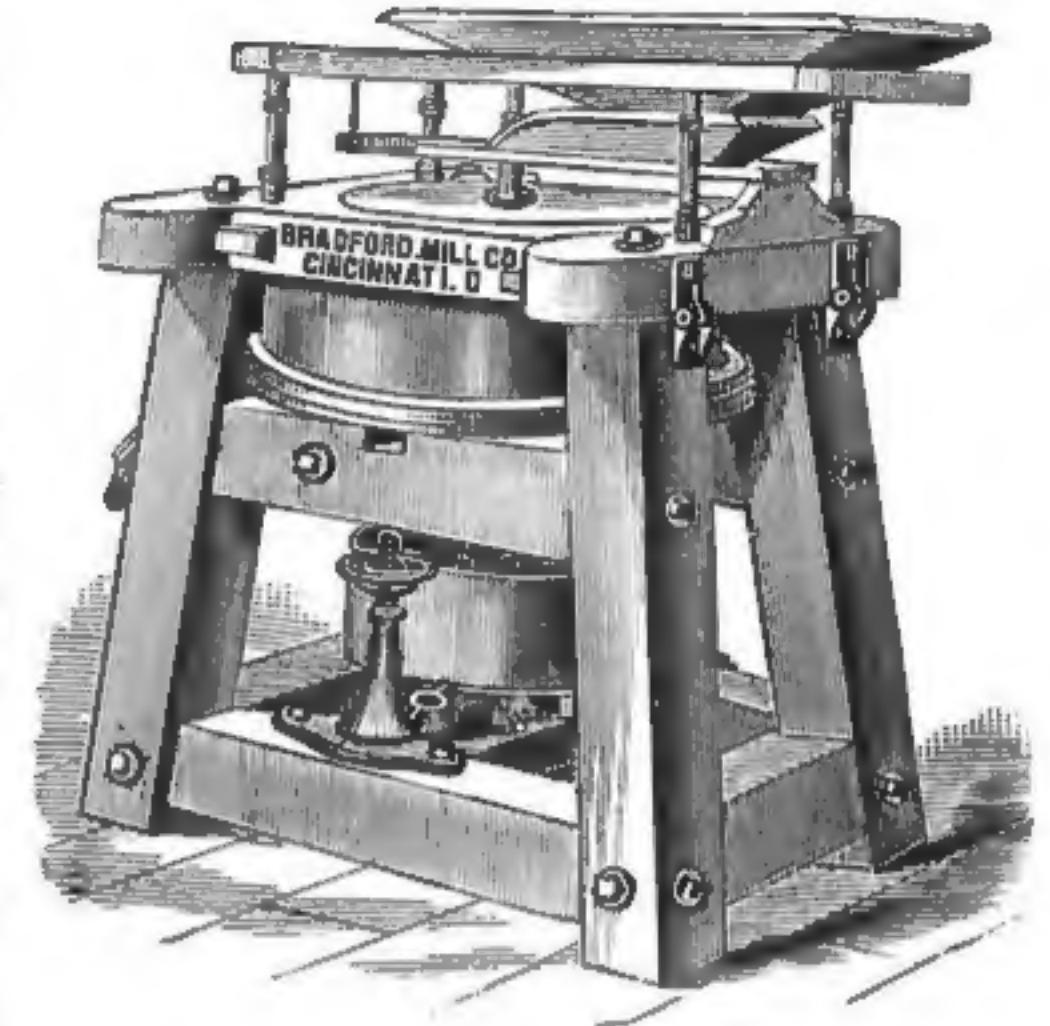
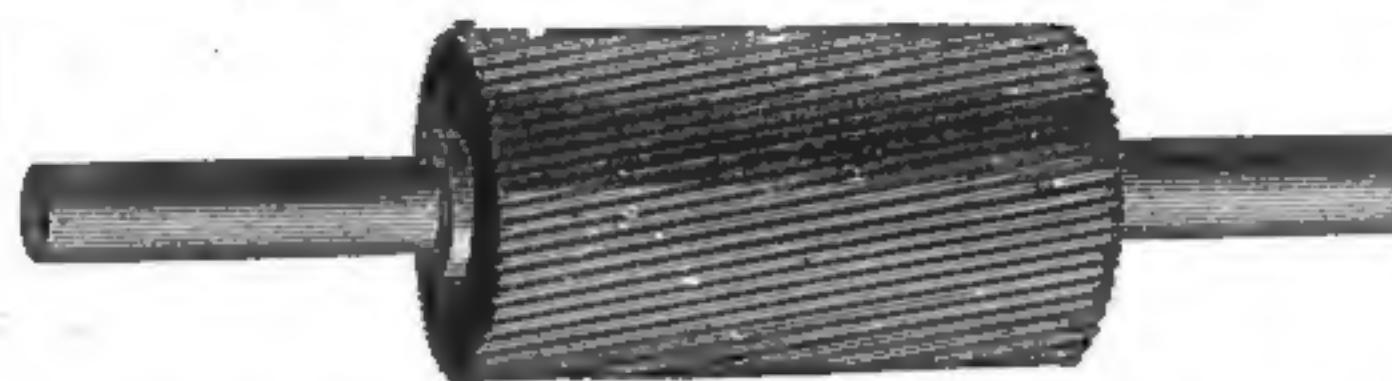
HORACE DEAL, - BUCYRUS, OHIO. BREWSTER BROS. & CO. Unadilla, N. Y.

THE BRADFORD MILL CO.



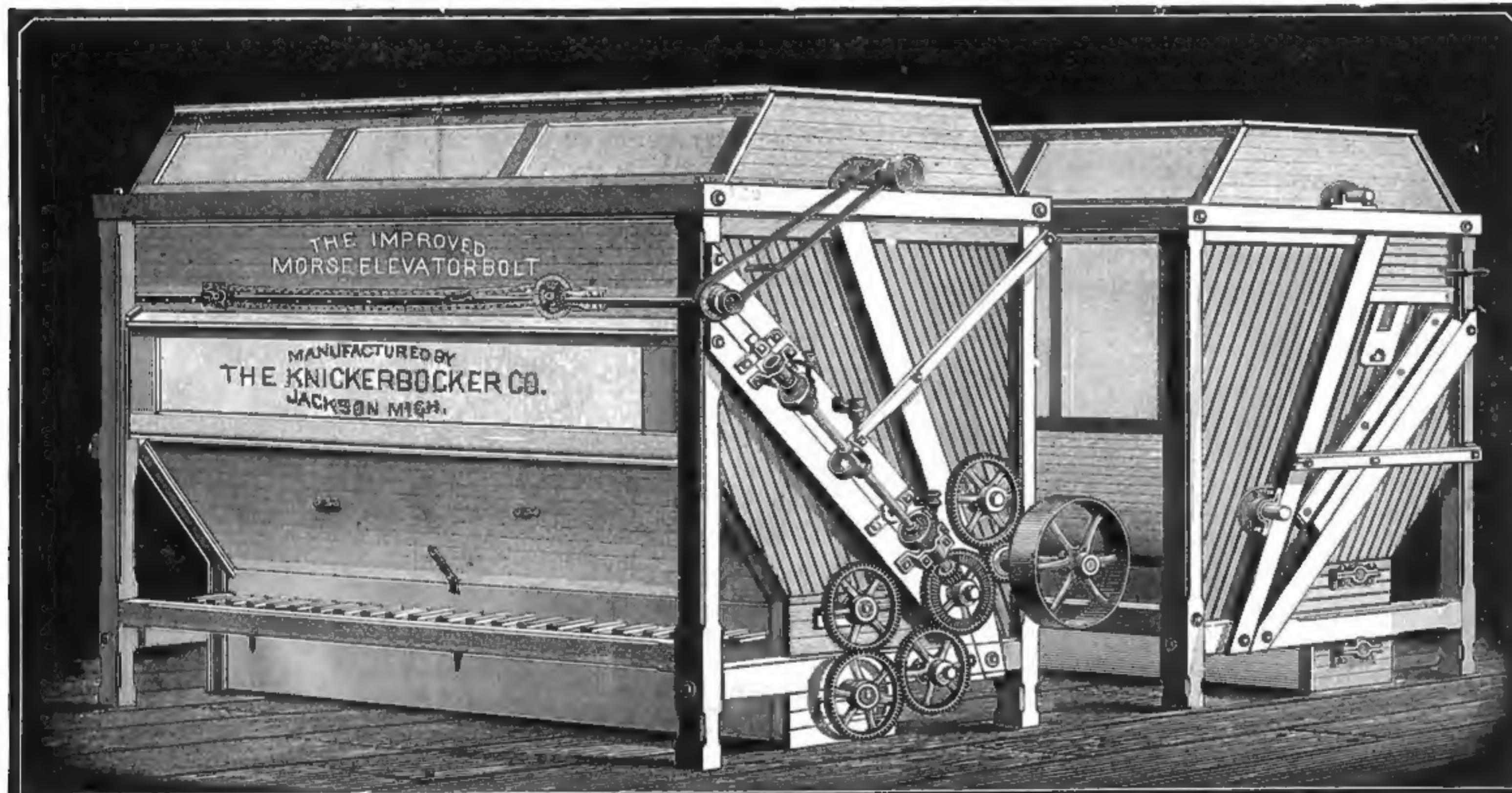
Manufacture a Complete Line of
FLOUR MILL MACHINERY,
Including Portable Corn and Middlings Mills.

RE-GRINDING AND RE-CORRUGATING
PORCELAIN
ROLLS
RE-GROUND.
CHILLED IRON
ROLLS
Re-Ground and
Re-Corrugated.



EIGHTH AND EVANS STREETS, - CINCINNATI, OHIO.

The Improved Morse Elevator Bolt.



DEMONSTRATED IN OVER 100 MILLS TO BE THE BEST BOLTING DEVICE KNOWN.

THE KNICKERBOCKER CO., JACKSON, MICH.

JOHN C. HIGGINS & SON,
Manufacturers and Dressers of
MILL PICKS,
168 KINZIE ST., CHICAGO.



Picks will be sent on 30 or 60 days' trial to any responsible Miller in the United States or Canada, and if not superior to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canada.

Send for Circular and Price List.

Toledo Mill Picks and Stone Tool Mfg. Co.

Manufacturer and Dresser of
MILL PICKS.

Made of the very best double-refined English cast steel. All work guaranteed. For terms and warranty, address

GEO. W. HEARTLEY, No. 297 St. Clair Street,

Toledo, O. Send for Circular.

N. B.—All Mill Picks ground and ready for use (both old and new) before leaving the shop. No time and money lost grinding rough and newly dressed Picks.

All come to hand ready for use.

ALSO MANUFACTURERS OF
SHAFTING, PULLEYS, HANGERS, COUPLING
AND MACHINE JOBBING.

CAREY'S CELEBRATED MILL PICKS

All Warranted made of Best Quality Cast Steel 50 cents per pound.

All Sizes in Stock.

SOLID COTTON BELTING AND ELEVATOR BUCKETS.

Send for New Catalogue and Price List Just Out, to

SAMUEL CAREY, No. 17 BROADWAY, NEW YORK.

CAREY'S DOUBLE ANCHOR BOLTING CLOTH.

HAS BEEN AWARDED
FIRST AND ONLY PREMIUM
AT THE
Millers' International Exhibition.



Office of THE MILLING WORLD.
Buffalo, N. Y., Dec. 17, 1884.

While wheat values fluctuate there is becoming evident a firmer feeling, and considerable confidence is being expressed that grain is by no means bad property to be possessed of. The new year, it is asserted, will show a marked advance in value, and one that will be maintained. Farmers' deliveries have been large, much larger than two months ago it was expected they would be, and the great bulk of supplies is now so placed as to be practically under the control of manipulators. This is one side of the story. The other side is that deliveries are but now being made with freedom, and it being uncertain how long, or in what volume, they will be kept up, renders the immediate future quite as uncertain as the past has been. In the New York market, according to the *Commercial Bulletin*, with a brace of holidays so near at hand, it is hardly reasonable to expect much in the way of business, and, considering this fact, the amount of trading now in progress, may be said to be fully up to seasonable proportions. Cash wheat is in fair demand for export and in moderate demand for local milling. Prices for the cash grain have undergone no decided change, but the views of holders are too firm for an active business, especially as exporters are not getting encouraging advices from their constituency abroad. The whole market is firmer in general tone, a fact which is due largely to covering by the more timid shorts, but just why the covering was commenced fails to appear in any new features of the general position. The upward movement was slight and somewhat irregular, as if the market did not know what to make of it. The advance was taken by some of the parties who have been "fishing for bottom" lately as the signal for "catching on," and altogether the buying in the way of "options" furnishes a very respectable aggregate for the day's business, although the market was at no time active. The receipts of wheat at the interior are generally light; the exception is at Chicago, where the receipts of spring wheat are very large. At the west the wheat markets are firmer; at Chicago the market closes firm at best prices, the fact of liberal receipts there having been discounted quite generally. More confidence in wheat at present prices is reported, based on the increased exports of last week from the Atlantic seaboard and a reduction of the initial movement through Minnesota and Dakota.

The rather firmer ruling of the wheat market has served to strengthen the views of flour holders a trifle, but the disposition is to take advantage of every opportunity that offers to work off arrivals rather than to store them, especially the medium qualities, which are too plentiful for firmness. The low grades and the high grades are doing a little better, but there is no quotable change anywhere. The market for rye flour is steady, with the demand moderately active at quotations appended; arrivals continue moderate. Buckwheat flour continues quiet at \$1.90@2.10 for the general business, with \$2.15 an extreme price for fancy lots; the tone of the market is steady. Corn goods continue in moderate demand, with holders less disposed to sell, however, unless at full prices. Mill feed moderately active and about steady with track arrivals moderate.

BUFFALO WHEAT MARKET.

Buffalo, Dec. 17, 1884.

Wheat market steady, some demand for Northern Pacific wheat for export, though it is confined to the lower grades. No. 1 and 2 Northern being the favorites. Our friends on the other side don't seem to know how to use our hard wheat. No. 1 hard sold at 81c for choice lots. No. 2 hard 78½. No. 1 northern 78½, most of this grade has been sold or is now in the hands of millers. No. 1 white winter, Buffalo Inspection, offered at 79½.

DUFOUR & CO.'S CELEBRATED BOLTING CLOTH.

FIRST AND ONLY PREMIUM
OVER ALL COMPETITORS!
PURCHASE ONLY
FROM RELIABLE DEALERS.

No. 2 red offered at 78@80c. Corn in fair demand for carloads on track. New mixed 42@43c. Oats dull and lower, No. 2 white 29½c.

J. S. McGOWAN & SON.

FOREIGN EXCHANGE.

The market for sterling opened weaker, but the low prices early attracted the attention of investors, which, coupled with a firm tone for money in London, caused a decided advance, the close being fully steady. Posted rates closed at 4.81½ for 60 days' and 4.85½ for demand. The actual rates ranged: At 60 days' sight, 4.80½@4.81; demand, 4.84½@4.85½; cables, 4.85½@4.85½, and commercial, 4.79½@4.79½. Continental exchange dull; francs, 5.25@5.24½ and 5.21½@5.21½; reichsmarks, 94½@94½ and 95@95½; guilders, 39½ and 40½. The closing rates were as follows:

	60 days.	30 days.
London	4 81½	4 85½
Paris francs	5 23½	5 20
Geneva	5 22½	5 19½
Berlin, reichsmarks	94½	95½
Amsterdam, guilders	40	40½

BUFFALO MARKETS.

FLOUR—City ground clear Northern Pacific spring \$4.50@5.00; straight Northern Pacific spring, \$4.00@5.50; amber, \$5.00@5.15; white winter, \$4.75@5.25; new process, \$5.50@6.00. Graham flour, \$4.00@5.00. Western straight Minnesota bakers, \$4.75@5.00; clear do., \$4.50@5.00; white winter, \$4.75@5.00; new process, \$6.00@6.50; low grade flour, \$2.50@4.00. OATMEAL—Ingersol \$5.75; Bannerman's \$6.00; Akron \$8.25. CORNMEAL—Coarse, \$1.00; fine, \$1.10 per cwt. RYE FLOUR—In fair demand \$4.00@4.25. WHEAT—Two boat-loads of No. 1 hard Northern Pacific were reported to have been sold at 81c. early in the day. 81c. asked 80c. bid cash, 80c. bid Dec., 81½c. asked 80½c. bid Jan., 85c. asked 84½c. bid May; car lots selling at 80½c. For No. 1 Northern 78½c. asked 78c. bid cash. Winter wheat firm CORN—Firm. Sales six car-loads new mixed at 48@48½c., nine do. new high mixed at 48½@49c. and three do. yellow at 44c. OATS—Dull at 30½c. for No. 2 white and 29c. for No. 2 mixed Western. BARLEY—Canadian quoted at 65@62c. and State at 55@75c. RYE—Nominal at 85c. for State and 60c. for Western.

WHEAT AT DULUTH.

A correspondent of the *Pioneer Press*, writing from Duluth, says: The wheat receipts from Duluth for lake season just closed were as follows, by months:

May	1,562,440,20
June	670,420,40
July	936,471,50
August	440,891,00
September	2,039,736,10
October	3,147,226,50
November	2,300,313,00

Total 11,097,499,50

During the same time there were 350,000 bushels shipped by rail, making the total shipments for the season 11,447,499,50, against 6,313,645,10 last year, being an increase in shipments of 5,133,854. The total receipts of the crop of 1884 up to date has been 10,637,276 bushels, and of this amount 7,847,276 has been shipped, leaving 3,150,000 bushels in store. Of elevator capacity here there are about 1,800,000 bushels yet left, not counting the Duluth & Western Elevator company, which is rejected by the Board of Trade and not in use. Daily receipts now average about 170,000 bushels, so the elevators will be full in about two weeks. Of the elevators, B C and E are all full but the lower floors, and wheat is now being let down on these. Elevator A is about full, and D, the new elevator just completed, and which received its first wheat a week ago, already contains 500,000 bushels. Workmen will begin at once to erect sheds for temporary storage of wheat. Superintendent Fisher, of the St. Paul & Duluth, is reported as saying there were 6,000,000 bushels wheat along the Manitoba road waiting to come here, and 400,000 bushels of corn, for which there is no place; also nearly an equal amount of wheat along the Northern Pacific. Of all this Duluth can receive about 2,500,000 this winter, and probably about 3,000,000 will be received after the boats begin to run in the spring, so this place cannot begin to handle all the wheat that is tributary here. There will be some shipped to Milwaukee and other milling points, by rail, this winter, so the amount Duluth can receive will be somewhat augmented. Total receipts of crop of 1884 will be about 15,000,000, an increase of over 100 per cent. It is estimated that, with the opening of

navigation, there will be enough cargoes of grain here, and over at Two Harbors, to load from four to five hundred vessels. Already there is talk of two new elevators here, and it is now almost certain there will be at least two new ones put up this winter, each with about one million bushel capacity. These will probably be erected by the Lake Superior Elevator company and Union Improvement and Elevator companies and be in the shape of store houses annexed to elevators D and E. There is some talk occasionally of an elevator to be put up by a new company, and the Omaha road has been mentioned as intending to build one, either at South Duluth or on this side of the bay. It is asserted that the land at South Duluth is not firm enough for one. Beside, the Duluth Board of Trade would hardly be willing to recognize an elevator outside of this city; so if the company should build, it would have to come to Duluth to do so, to secure the best facilities.

NOTES.

Chas. Troup, Watseka, Ill., has placed his order with the Case Mfg. Co., Columbus, O., for two pairs of rolls, with patent automatic feed.

Russian wheat will soon move more freely into British and Continental markets. Arrangements have been made with the Rigg-Mitau and Libau-Rommy Railways for a direct sea service from London, Hull, Newcastle, Antwerp, Havre, Bordeaux, Lubeck and Copenhagen via Libau to Riga and *vice versa*. The new railway service will be opened on the 13th of this month at reduced rates and will be continued during the winter.

JAMES S. McGOWAN & SON,
SHIPPING AND COMMISSION MERCHANTS.

Choice Milling Wheats a Specialty

Room 60 Board of Trade Building.

BUFFALO, N. Y.

No Charge for Inspection

THE BOSS ELEVATOR CUP



is gaining favor every day. Over 18,000 sold in one day in three different States. My capacity in my new shop is 6,000 per week. I carry 30,000 cups in stock and can take care of any size order.

W. F. MYER,
19 and 21 E. South St.
INDIANAPOLIS, IND.

The Best Conveyor Flights and Cogs. The Best ELEVATOR CUPS

Bolts,
Cotton &
Rubber
Belting,
Best
Power
Corn
Sheller
at lowest
prices. Send for Circular.

A. H. FAIRCHILD & SON,
North Bloomfield, Ont., Co., N. Y.

1831 THE CULTIVATOR 1885
AND
Country Gentleman

THE BEST OF THE AGRICULTURAL WEEKLIES.

THE COUNTRY GENTLEMAN is the LEADING JOURNAL of American Agriculture. In amount and practical value of Contents, in extent and ability of Correspondence, in quality of paper and style of publication, it occupies the FIRST RANK. It is believed to have no superior in either of the three chief divisions of

Farm Crops and Processes,
Horticulture & Fruit-Growing,
Live-Stock and Dairying,
while it also includes all minor departments of rural interest, such as the Poultry Yard, Entomology, Bee-Keeping, Greenhouses and Grapery, Veterinary Replies, Farm Questions and Answers, Fireside Reading, Domestic Economy, and a summary of the News of the Week. Its MARKET REPORTS are unusually complete, and much attention is paid to the Prospects of the Crops, as throwing light upon one of the most important of all questions—*When to Buy and When to Sell*. It is liberally illustrated, and is intended to supply, in a continually increasing degree, and in the best sense of the term, a

LIVE AGRICULTURAL NEWSPAPER.

Although the COUNTRY GENTLEMAN has been GREATLY ENLARGED by increasing its size from 16 to 20 pages weekly, the terms continue as heretofore, when paid strictly in advance: ONE COPY, one year, \$2.50; FOUR COPIES, \$10, and an additional copy for the year free to the sender of the Club; TEN COPIES, \$20, and an additional copy for the year free to the sender of the Club.

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THE BEST AND CHEAPEST COB CRUSHER IN THE WORLD.

Steel Being Used in its Construction.

AGENTS WANTED EVERYWHERE.

RIGHT-HAND MILL.

CAPACITY 75 BUSH. PER HOUR.

Thousands of these Crushers are now in use, and giving entire satisfaction.

Please Send for Circulars.

R. C. McCULLEY, LANCASTER, PENN.



ARE MADE ONLY BY
STILWELL & BIERCE MFG. CO., DAYTON, O.

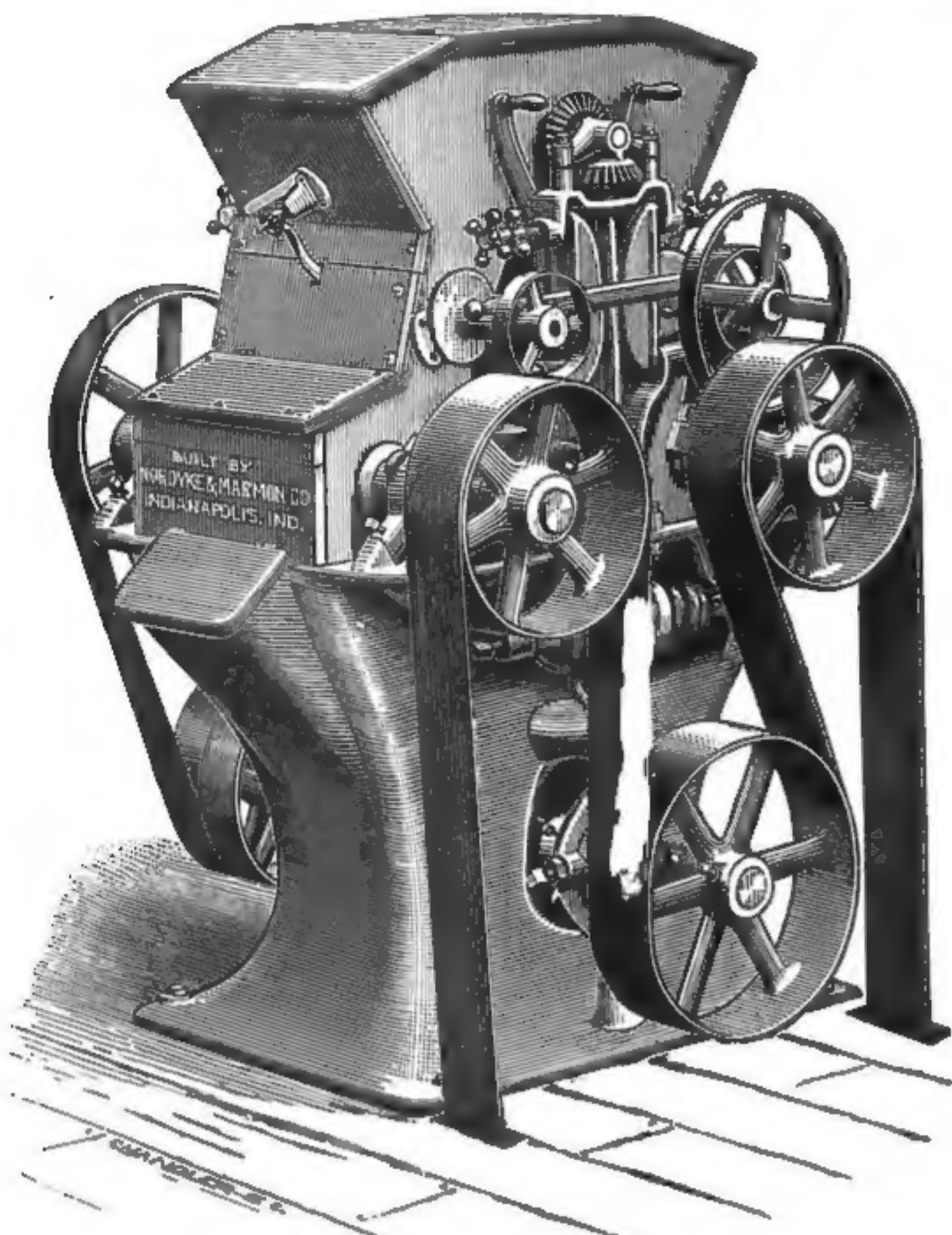
ODELL ROLLER MILLS

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Builders from the Raw Material of

ROLLER MILLS, CENTRIFUGAL REELS, FLOUR BOLTS.

WE ARE THE SOLE OWNERS FOR THE UNITED STATES OF ALL THE PATENTS UPON THIS ROLLER MILL.



*This Is the Only Roller Mill Made Having All the Essentials
Needed In Successful Milling.*

500 BARREL MILL IN MISSOURI.

Read what an Old Miller who has Thirty-Four Pairs of these Rolls in Constant Use, Says:

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen: In regard to the workings of our new mill erected by you, will say it is fully up to and beyond our expectations. Our average work is fully 30 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors, "You may try to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,

Yours, etc., R. M. FAUCETT, PRES.

OFFICE OF DAVIS & FAUCETT MILLING CO.,

St. JOSEPHS, MO., Nov. 28th, 1888.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen: We started up our mill in June last year, and it gives us pleasure to say that your Roller Mills are doing splendid work and give us no trouble. Your milling program required no changes, and concerning yields, we get all the flour from the offals, and we sell our best grades in the principal markets of the United States at the highest prices offered for any flour. All the machinery made by you is first-class, and we would not know where to purchase as good.

Yours respectfully, DAVID SUPPiger & CO.

500 BARREL MILL IN ILLINOIS.

OFFICE OF DAVID SUPPiger & CO.,

HIGHLAND, ILL., Jan. 10, 1884.

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen: The 125 barrel All Roller mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading mill furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantees. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you.

Yours truly, J. T. FORD.

125 BARREL MILL IN INDIANA.

LAPEL, MADISON COUNTY, IND., Jan. 10, 1884.

Gentlemen: The 125 barrel All Roller mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading mill furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantees. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you.

Yours truly, J. T. FORD.

Letters on file in our office from a large number of small roller millers giving as favorable reports as above. A portion will be published as occasion demands.

SPECIAL MILLING DEPARTMENT!

Mill Builders & Contractors--Guarantee Results

Motive Power and Entire Equipment of a Modern Mill Furnished under one Contract.

KEYSTONE CENTRIFUGAL REEL

PATENTED MAY 6th, 1884.

Drag Brush Feed, Tightest Heads, Best Results. Cheapest and Best on the Market. Adapted to all Kinds of Milling. The New Drag Feed Thoroughly Protects the Silk. Sent on Trial to any Responsible Miller.

ROLLER MILLS, SCALPING REELS, PULLEYS, SHAFTING AND ALL KINDS OF MILL IRONS.

Full Stock of Dufour and Dutch Anchor Bolting Cloth.

BEST QUALITY FRENCH BURR MILLSTONES, FOR MIDLINGS, WHEAT AND FEED. Leather, Rubber and Cotton Belting, Smut Machines, Purifiers and everything belonging to a Flour Mill furnished at Lowest Market Prices. For Circulars, Prices and Full Particulars, address the Manufacturer,

C. K. BULLOCK, 1357, 1359, 1361 RIDGE AVE., PHILADELPHIA, PENN.

UNION STONE CO., BOSTON, MASS.

PATENT MILLSTONE CEMENT.

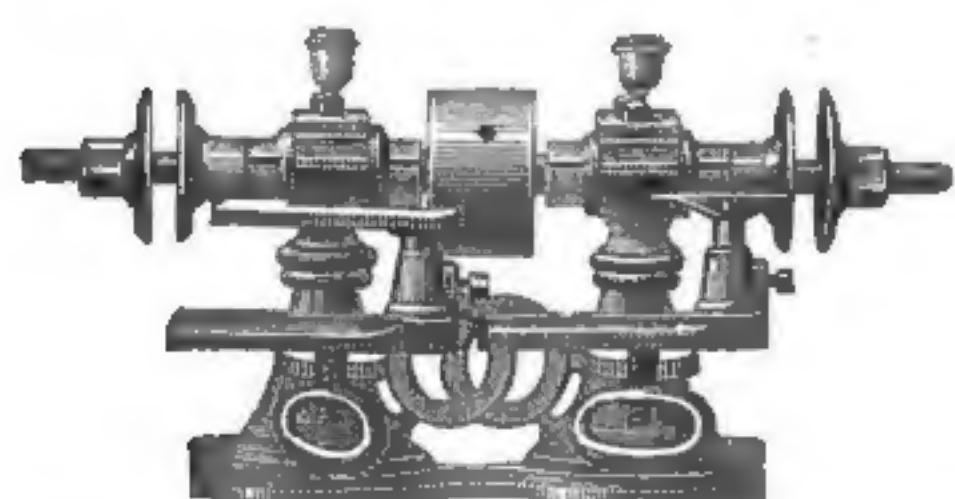
Invaluable to Millers for Repairing and Filling the Joints,

This is a new article of manufacture, and is greatly superior to the preparations now in common use, containing nothing of a poisonous nature. It has the nature and attains the hardness of stone, and assists in grinding. Good Millstones are now in use, composed entirely of this preparation. The Leading Makers are Adopting it to Build Their Millstones. For we cannot open an account for so small a sum, therefore **Cash should be sent with order**, otherwise we shall send C. O. D. by Express, collecting for return of the money. For manufacturers, the Furrows and



Cavities and Seams in French Burr and other Millstones.

use by millers. It is much cheaper, and can be applied by an inexperienced person. It is perfectly of French Burr Stone, wears evenly with it, and not only fills the cavity, but adheres to and becomes part of this preparation. The Leading Makers are Adopting it to Build Their Millstones. For we cannot open an account for so small a sum, therefore **Cash should be sent with order**, otherwise we furnish in bbls. of 300 lbs. Price upon application. Emery Rub Stones, for hand use in Finishing Faces of Millstones.

Emery Wheel Machine No. 8 Has $\frac{3}{4}$ Inch Arbor.

Union Stone Co., 38 & 40 Hawley Street, Boston, Mass.

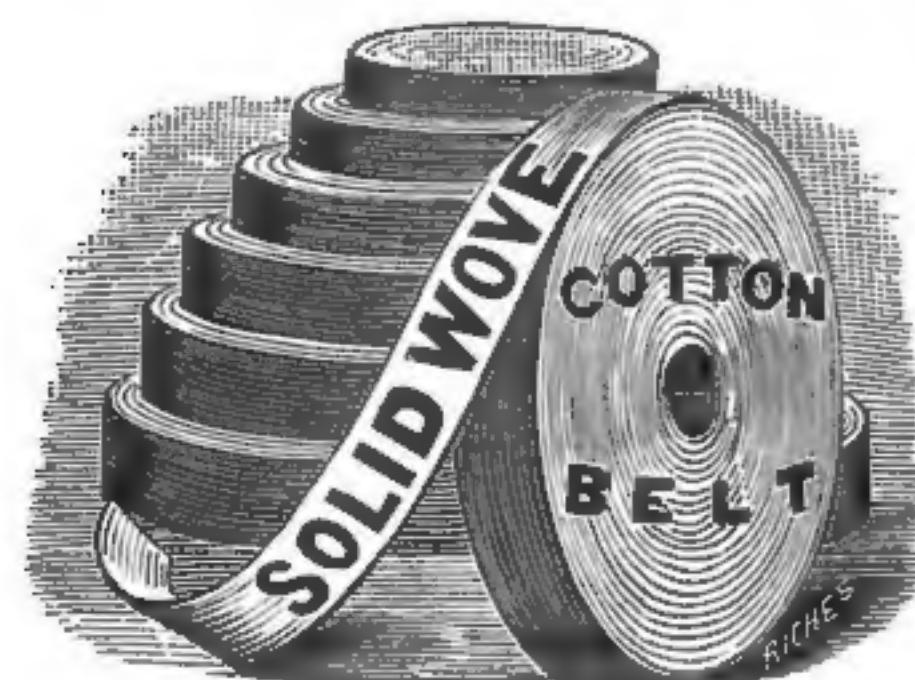
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Everything Used in
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Always on Hand.Leather
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And Re-corrugated to order. Porcelain rolls re-dressed. Our Machinery for this purpose is very accurate. Can do work promptly.

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From the engine house of The Geo. T. Smith Middlings Purifier Company, at Jackson, Michigan, the Eldred Milling Company is erecting a 250-barrel flour mill.

It will be equipped with SMITH PURIFIERS, SMITH CENTRIFUGALS, and

THE STEVENS NON-CUTTING ROLLS

The power will also be supplied by the SMITH Co. It is intended to make this a MODEL CENTRIFUGAL ALL ROLLER MILL, open to the inspection of the world. Competitors for placing the rolls in this mill appeared from *Milwaukee, Indianapolis, Grand Rapids*, and many other points, but the award was made solely upon the acknowledged merits of our rolls for their CAPACITY, QUALITY OF WORK PRODUCED, HORIZONTAL AND PERPENDICULAR ADJUSTMENTS, FEEDING DEVICE, and general substantial appearance and worth. Success is the true test of merit.

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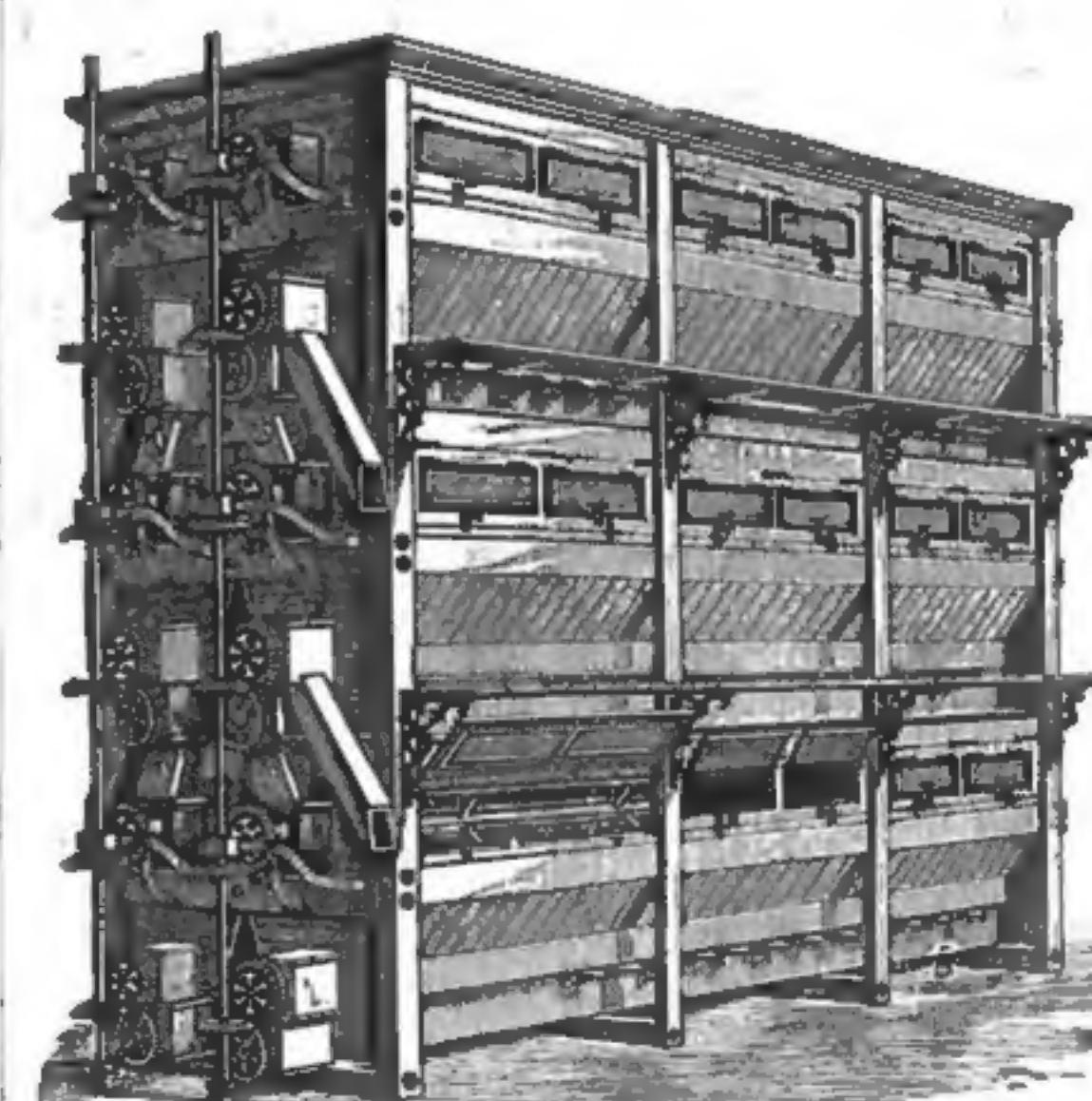


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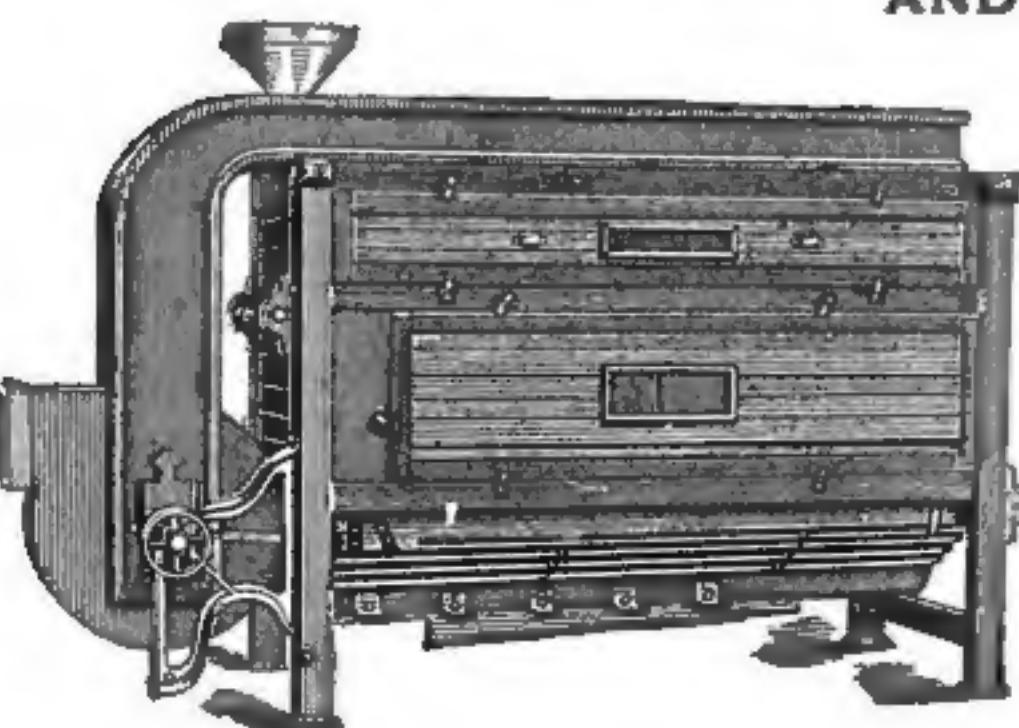
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